

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 111, No. 1

COPYRIGHT, 1938, BY AMERICAN MEDICAL ASSOCIATION
CHICAGO, ILLINOIS

JULY 2, 1938

THE CARE AND TREATMENT OF CEREBRAL PALSIES

WINTHROP MORGAN PHELPS, M.D.
BALTIMORE

The care of cerebral spastic paralysis is a rather general problem in which the orthopedic aspect is the biggest single factor, but orthopedic measures alone will not in many instances accomplish the desired results. The problem deals with a deviation from the normal which has existed since birth in most instances. This particular factor differentiates the paralysis from acquired conditions. When one considers the motor side alone, it is easy to see that primary action patterns such as alternation of the legs and function of the reach and grasp may not be automatically developed. Likewise, the ability to suck and to swallow and the primitive throat and tongue motor patterns, from which speech originates, may not have been developed. The relationship of these defects to the total picture of the intelligent person is the problem. All teachers are insistent on a thorough knowledge of fundamentals in any teaching problem. In the case of spastic paralysis the absence of physical fundamentals makes subsequent teaching unsuccessful unless thought and care are given to all the fundamentals which may be lacking in the original development.

It is necessary to determine what must be the aim of treatment. A broad statement is that the object is to make the child fit the groove of normal humanity. "The groove" is a vague concept of the type of behavior which is expected of the average person. Physically he walks without a limp, he speaks in a certain way and the way he uses his arms is dependent on the apparatus with which he is surrounded. He laughs only in moderation; he does not cry publicly. There are definite racial and national behavior habits. The fiery Italian, the stolid Indian and others show apparently national characteristics, and the behavior of the individuals of each race is normal for them but not for other races or nationalities. Even differences in methods of walking can be demonstrated, and the excessive use of the arms in gestures is familiar to all. The greatest national or racial difference is in speech. Some languages lack entirely the sounds which are common in others. A foreigner speaks with an accent which is a definite handicap when he is transplanted to a nation with another language. When a member of any race or nation is transplanted he seldom automatically fits the groove.

DETERMINATION OF MENTAL DEFICIENCY

The person who is handicapped from birth is further from the groove of his particular race or nation than

is any one else. The problem is a many-sided one which no one person is trained to solve, because the various points of view cannot be satisfactorily attained by one person. The gait of a child and his emotional behavior are apparently not very closely related, but in making him a normal human being one is as important as the other. The child must be measured against the theoretic normal from all points of view. The commonest measurement is the determination of the mental age by the Binet scale or some similar system. The mental age, however, is far from the only age which must be measured in the child handicapped from birth, as it is impossible to determine exactly what limitations the complicated handicap may impose. He must also be measured physically, so that the percentage of the ability to move at a given age as compared to that of the normal child will be known. He should also be measured from the point of view of his social competence. Doll and his co-workers in Vineland, N. J., have evolved a scale of social competence for measuring the social age, and this is important in connection with the child with spastic paralysis.

Because the centers controlling laughter, crying and the other motor pictures accompanying emotion may be affected, the child's emotional age should be determined so far as possible. Definite attention must be given also to his interests and aptitude, since the handicapped child is likely to develop unevenly because of inability to enter into the normal activities of other children of his own age.

It is only after all these measurements have been made that it can be determined whether definite mental deficiency is a part of the picture.

The brain is such a complicated mechanism that it is impossible to imagine two injuries which would be alike. The division in general of motor injuries to the pyramidal system and motor injuries to the extrapyramidal system is very important as a factor in determining where the lesion is in the brain. The location of the lesion should have some bearing on the probability or the lack of probability of mental deficiency. If it can be determined, as it sometimes can, that the injury is at the base of the brain and that the cortex of the brain is not involved in any way, it is difficult to explain true mental deficiency as a result of the injury. A differentiation must, of course, be made between true mental deficiency and retardation on the basis of the handicap.

Often the true underlying situation can be determined only by a test of teaching; if the child can be made to progress and learn at the rate of a year per year, then obviously true mental deficiency is not present; instead, the ability to learn by the usual methods is blocked by some part of the handicap, and special teaching methods are necessary.

CEREBRAL PALSY

The distribution and the number of persons with cerebral palsy throughout the United States are not clearly known. A few surveys have shown that the number is greater than the number of persons with infantile paralysis, while other surveys have shown that it is somewhat less. Apparently the conditions are almost equally frequent. Many of the subjects are in institutions for the feeble-minded; many others are homebound, and a certain number, which appears increasingly large, are being taken care of in the public schools. Still another group may be found in the private schools for defective children, the membership of which is often composed largely of such children.

The percentage of these children who are truly feeble-minded is not known, but the percentage who are mentally normal but suffering from retardation due to the handicap is apparently greater than the actual number of feeble-minded. As methods of teaching are developed, the number of supposedly feeble-minded children is decreased still further.

The majority of the children are suffering either from congenital malformation or maldevelopment of the central nervous system or else from an injury that occurred at about the time of birth. Actual obstetric injury is found to play a comparatively small part. By obstetric injury is meant damage to the child due to poor handling of the obstetric problem. Two general types of injury may cause cerebral palsy: first, damage to the cortex of the brain, which most frequently results from misplaced or too tightly placed forceps, and, secondly, injury to the base of the brain resulting in a hemorrhage into the basal nuclei from a tear of the tentorium and the vein of Galen, as a result of too strong traction and stretching of the neck, which has been demonstrated by Crothers. The first type of injury, the cortical type, produces definite spasticity, while the second type of injury, the basilar type, produces athetosis, tremor or incoordination of some sort.

SPASTICITY AND ATHETOSIS

With a congenital defect, as compared to an injury received at birth, it has been shown that there may be a congenital anomaly or deficiency in the cortical or pyramidal system, resulting in spasticity, or a definite abnormality or absence of part of the basal nuclear mechanism, resulting in athetosis, tremor or incoordination.

The third chief cause of cerebral palsy is the damage produced by encephalitis, and in some postencephalitic patients the damage is essentially that which produces spasticity and in others essentially that which produces athetosis. One is therefore dealing with a triple cause, namely, congenital malformation, injury received at birth and postencephalitic manifestations. One is also dealing with two resulting conditions: first, spasticity and, second, athetosis or involuntary motion. It was formerly supposed that the combination of these two conditions is frequent, but on careful study it was found that, although the combination does occur, it is comparatively rare. A possible mechanism of its occurrence, for example, is extremely rapid birth of a premature child. The walls of the blood vessels are perhaps not as strongly developed as they would be if the child were born at term, and the sudden release from the greatly increased pressure within the uterus to the comparatively low pressure of the air outside can produce petechial or multiple hemorrhages in the brain which result in a condition similar to the "bends," or

caisson disease, and in diffuse damage to the brain, with perhaps a mixture of spasticity and athetosis, depending on the distribution of the hemorrhages. It is necessary to make a clear differentiation between spasticity and athetosis, however, because the treatment of the two conditions is very different. If one thinks of spasticity as stiffness of muscles and athetosis as involuntary motion, the greatest difference can be seen between them. However, the results produced when the child attempts to move are sometimes so confusing that the difference is indistinguishable at first sight, as the spastic child in attempting to move brings about the stretch reflex, which causes contraction of other muscles involuntarily, but secondarily to the attempted motion, and results in incoordination. The athetoid child, on the other hand, has involuntary motion before he attempts to make a voluntary movement and attempts to stiffen the muscles or contract them strongly in order to control this involuntary motion. The effect looks like spasticity and also results in incoordination. It is sometimes difficult to determine which condition is being dealt with in less than several hours of study of a given patient.

The neurologic examination, of course, should be entirely different for the two conditions. In the first place, if a pyramidal condition, or true spasticity, is present there should be hyperactive knee and ankle jerks, a positive Babinski sign, occasionally ankle clonus, diminished or absent cremasteric and abdominal reflexes and hyperactive biceps, triceps and periosteal reflexes. These changes are characteristic of damage to the pyramidal system and should be found. In the case of athetosis, on the other hand, or extrapyramidal disturbance of any kind, the reflexes should be essentially normal. That is, the knee jerks and the ankle jerks should be normal. A Babinski sign may be present. The reason for this is not clearly understood at the present time, although there are many theories. The cremasteric and abdominal reflexes and the arm reflexes should be normal.

Great care must be taken to determine that these tendon reflexes are really normal, however, as it is easy to mistake a reflex that is being reinforced automatically by involuntary motion for a true hyperactive reflex. It is only by eliciting the reflexes over and over and finding that they are normal part of the time that a true diagnosis of extrapyramidal dystonia can be made.

The necessity for differentiating these two conditions has been emphasized because not only is treatment of the two conditions different but the general characteristics of the spastic subject and of the athetoid subject differ widely. The patients respond to situations in a different manner, and their behavior is different under similar circumstances.

When there is speech involvement, the type of speech defect is entirely different. With spasticity the defect is rather uniform, and the type of speech utilized by truly spastic subjects can be learned easily by those working with them to any extent. It is due, of course, to definite spasticity in some part of the speech mechanism, and the result is speech that is defective but in definite ways. In the athetoid patient, in whom involuntary motion is the primary difficulty, the speech is upset by the involuntary motion of the tongue, for example; and as the involuntary motions never coincide with the voluntary ones made on the patient's attempt to speak, the words never come out distorted.

in the same way but on repetition are spoken a different way each time. No amount of attempting to say the word over will result in improvement, as the word will be distorted in a different direction on each trial and the patient will finally give up the attempt entirely. On the other hand, repetition and training of this sort in cases of spasticity produces clearly defined improvement.

This point is brought out for the purpose of showing one of the definite differences between the two types. It can be said that throughout the entire treatment repetitive methods are of definite use for spasticity but are of no avail for athetosis, as with the latter attempts to carry out definite repeated activities in speech or in the use of the arms or legs are doomed to failure. This difficulty is carried over into the mental and general life, and repetitive methods have been found to be generally unsuccessful in all lines in the teaching of athetoid children. It is important that the differences in behavior and in methods of training be known by all who come in contact with such children not only in the orthopedic field but in all fields in which attempts are being made to improve them. Studies are being made at the present time on the differences in the behavior of the athetoid and of the spastic child which should be very enlightening when completed.

PLAN OF TRAINING

It can be seen that the training of such children is a general problem and involves the orthopedic, psychologic, speech and educational fields. The activities must be so interrelated that the therapist in each field knows clearly what is being carried out in the other fields.

In the educational field, in the teaching of normal children a definite course has been set up. This begins with fundamentals, and the various branches are brought in at certain ages. Thus "the three R's" are taught in the first grade, whereas such things as economics, languages and political science are brought in at entirely different points in the education. The times at which these subjects should be taught have been to some extent decided on. In the case of the child who has been crippled or handicapped in speech and action since birth, a similar regimen must be set up to care for the physical and motor side and to parallel the mental educational system.

Obviously, fundamentals must be stressed first, and in this instance fundamentals represent primary motor activities. No reliance must be placed on what are generally considered automatic instinctive activities. The young animal is able to walk if not on the day of birth at least within a few days, because of the automatic application of alternation in the legs in muscular contraction. This alternation can be seen in the human being in the kicking motion which babies normally carry out very early. However, if a part of the motor mechanism which controls alternation is interfered with, alternation will have to be taught as a voluntary function and trained into the habitual level before any attempt at alternate progression of the legs can be made.

In the spastic child this difficulty is often met, but it is interesting to see that even with the spastic baby alternation can be taught and trained into a habit. In the athetoid child, on the other hand, the primary ability to move is undisturbed, since the damage does not lie in the pyramidal or voluntary motor system, but the activities are hampered by the superimposition of invol-

untary motion, which steers the voluntary attempts in the wrong directions. Thus even the fundamentals which must be taught to the spastic and to the athetoid child are entirely different. If a normal person attempts to write on a piece of paper in a rapidly moving automobile on a rough road, his instinctive reaction is to steady himself by tensing the arm and body. This tension however will result only in worse writing, as all the jolts produced by the automobile are thus much more forcefully transmitted to the hand. If, however, the person attempts to loosen up completely and relax, all the joints act as shock absorbers and the writing is much improved.

The athetoid child reacts to his involuntary motion by voluntary tension, and after a number of years the tension habits become so fixed that he cannot make any motion without bringing in extreme stiffness. His habits must be unlearned in order to bring about a diminution of the athetosis. Athetosis disappears during sleep, and the amplitude of the involuntary motions decreases greatly with relaxation and increases with increased tension. Through the teaching of extreme relaxation the amplitude of the involuntary motions associated with athetosis can, in many cases, be so reduced as to be almost negligible. It is possible to teach relaxation by special methods to very young children and even to babies, and once the subject has realized the advantages of being relaxed he can substitute a habit of relaxation for one of tension, and improvement can go on more rapidly. It is therefore not necessary, for example, to teach a truly athetoid child alternation exercises of the legs, since the mechanism for alternating motion is essentially pyramidal and is not disturbed but only blocked by the athetosis. Repetition of alternate motions of the legs passively, as in bicycling, is of use in the case of spasticity and in itself will bring about habitual alternation. In the case of athetosis, however, no amount of repetition will do any good unless attention is first given to relaxation, and when relaxation has been accomplished the alternation will be normally present.

Another phase of the problem which must be considered before a treatment unit is set up is the distribution of the involvement in the individual case. Is the child most in need of being taught to walk or are the problems of speech or of use of the arms more important? A great many children are seen who have been the rounds of many physicians and on whom a large amount of the time has been spent on operations and treatment for the legs although the arms and the speech are practically useless. Of course the problem is relatively simple when the child has spasticity or athetosis involving the legs alone. The attention of course should then be centered on teaching him to walk if possible and on improving the use of the legs. However, when the legs and likewise the arms are useless, the question of future walking is much dependent on the development first of the proper use of the arms. The balance sense is usually badly disturbed, and it is necessary for the child to use a crutch or a wheelchair for a period before attempting free walking with the legs and obviously if the arms are useless they cannot help in balance, and the use of crutches is out of the question. It is important to have a clear realization that this stage must be carried through before walking can really be accomplished. This fact is too often forgotten. In the case of a severely handicapped child who has no use of the arms or legs and little or no speech, it would seem that the most desirable improvement to begin with would

be to obtain speech, so that communication could be carried on more freely and normally between the patient and those around him.

The attitude of the family is often interesting. In such cases as the one just described I have seen the members of the family insist that what they wanted was to have the child taught to walk, while it was at the same time necessary for them to do the dressing and feeding and to interpret the child's poorly developed sign language for communication.

The distribution of the handicap in the patient is important from another standpoint also. It is necessary to consider the education of the diplegic child with normal arms from an entirely different point of view from that of the hemiplegic child who has only one bad leg but also one useless arm. There are many occupations for the person whose arms are normal which can be carried out while he is sitting in a chair. It is necessary only to make him independent, so that he can go to his place of occupation. But when one arm is involved the problem is much more complicated. It would seem important to carry the education of the hemiplegic patient far beyond that of the diplegic patient, as the gainful activities are so much more limited for the latter than for the former.

In determining the proper regimen and method of treatment, therefore, one must determine first what the various age levels are. That is to say, the mental level, the level of physical ability, the emotional level and the level of social competence. The distribution of the handicap must then be considered and a decision made as to whether the work is to be concentrated on walking, use of arms, speech or a combination of these functions. The degree of the handicap should then be roughly determined. It is customary to classify it simply as severe, moderate or mild. In the case of the child who is seen during babyhood, that is to say, in the first year of life, the three particular fields in which treatment should be carried out are, first, development of simple motor coordination; second, behavior control, and, third, the simplest control of psychologic reactions to situations.

TIMING

A great deal can be gained by starting treatment in these fields very early. The sooner the child is able to find out that a special regimen is necessary in order to make his body work for him, the less unteaching of bad habits of action will have to be utilized. During the preschool period, that is, between the ages of 2 and 5 years, the speech work should be begun. It is useless of course to attempt to teach speech to babies under 1 year old. They learn gross motor coordination involving large joints, such as the hips, the shoulders and probably the elbows and knees, comparatively easily, but little should be done at this stage with regard to the fine coordinations, which are not normally developed in the child until the primary school age has been reached. In the preschool child, behavior is very important. It is necessary that he be much more responsive to disciplinary measures than the normal child, as the effort and the necessary obedience to make him carry out the corrective measures is important. It is during this age that walking should be started if it is to be attempted.

The teaching of these functions is begun at these ages because there is apparently an optimal age for the different activities. In other words, it has been seen that, if a child reaches the age of 5 or 6 before he is taught to speak, the attempt to teach him to speak is

much more difficult than if it is started during the period when he would normally learn to speak. This of course applies not to the child who is mentally retarded but to the child in whom the lack of speech is entirely due to the handicap.

The situation with regard to walking is the same. The normal child learns to walk before the age of 2. It is advisable, therefore, whenever possible to try to bring about walking during this period, as it will be much more easily accomplished. The reason for the greater difficulty in accomplishment of walking by an older child is obvious, as, when the body becomes larger and the child taller, the falls which the child takes when attempting to walk are much more painful and he is more likely to be hurt; but the optimal period is apparently also a factor in this particular activity.

When the child has reached the primary school age the motor reeducation should parallel the type of education which he is receiving at school. In other words, the finer motions of the hands and feet should be developed and the finer coordinated sounds of speech should be worked on particularly. It is necessary at this age to give considerable time to the question of behavior and psychologic adjustment to other children. Previous to this age the child is happy playing essentially by himself, but when he reaches school age group play becomes a more important factor. It is well to develop this if possible, as the handicap in many instances tends to work against it.

As the child becomes older the various activities become more skilled in type. For example, the child at the early primary school age spends a great deal of time playing games such as hide and seek and tag, which require little or no skill. After two or three years he attempts to roller skate or to skip rope, and a gross type of skill is developed. It is necessary to parallel this type of skill in the handicapped child who has reached that age. The idea of the optimal time for different types of activity should carry through the entire training period. It can easily be seen that types of skilled motion which are not learned by the normal child at a given age should not be taught the handicapped child before he has reached the age when he should acquire these skills naturally.

The actual method of treatment, as I have said before, differs markedly for the spastic and for the athetoid child. In the case of the spastic child the fundamental principle is that the spastic muscle contracts maximally to any stimulus applied to it. The most commonly applied stimulus is the stretch reflex. This is brought about by the voluntary contraction of the antagonist of the spastic muscle. An attempt to extend the arm in the case of a spastic flexor would result in an immediate contracture of the flexor, which would block the motion.

An examination of the muscles should be done in each instance to determine the distribution of the spastic muscles. It will be found that in each spastic extremity there is a spotty or unrelated group of muscles which show the stretch reflex. These can be charted as the spastic muscles. Another group of muscles will show normal contractility, and when an attempt is made to move the muscles passively against their direction of contraction no stretch reflex will be found. These muscles can be charted as normal. A third group of muscles will be found in which the voluntary ability to contract is entirely lacking. These muscles can be charted as flaccid muscles, although this particular type of flaccidity is different from that of the usual lower

motor neuron paralysis. (That there is such a thing as cerebral flaccidity has been shown by the work of Fulton and others, in the studies of the cortex of the chimpanzee.) The muscles then are grouped in antagonistic pairs, and it must be determined whether two spastic muscles are acting against each other, a spastic against a normal muscle, a spastic against a flaccid muscle or a normal against a spastic muscle.

The flaccid muscles must be treated in much the same way as the flaccid muscles of infantile paralysis are treated. That is to say, they must be protected from being overstretched and must be massaged to increase their tone. It has been found that, by forceful resisted contraction of some other muscles in the body, the flaccid muscles may frequently be brought into an involuntary, or automatic, contraction. This can be utilized as a stimulus for developing power in these muscles, and in many instances the patient can be taught to utilize this confusion to bring about a useful contraction in the apparently flaccid muscle. The normal group of muscles, of course, does not need any treatment whatever unless contracture has resulted from flaccidity of antagonists or from gravity.

SURGICAL PROCEDURES

The spastic group must be treated to reduce the spasticity by either gradual voluntary exercises or surgical intervention in the form of partial neurectomy. Neurectomy must be carried out with great care with regard to the degree of weakening to be accomplished. The deciding factors in the procedure are the state of the antagonists and the degree of spasticity in the muscle which is being operated on. For example, if a spastic muscle is pulling against a cerebral flaccid muscle, the degree of neurectomy will have to be more nearly complete than if this muscle were working against a normal muscle. The determination is made by the amount of power in the antagonist, and an attempt is made to balance the power as nearly as possible.

Other surgical procedures, such as lengthening of a tendon, are to be considered at times. Lengthening of a tendon produces a definite weakening of the power of the muscle. Actual tenotomy of a muscle or a tendon should rarely be done, as this leaves no power whatever in the muscle and it cannot work reciprocally against any antagonist. When three or four muscles perform the same function, such as adduction of the legs, tenotomy of some of the adductors will produce a weakening which will result in a balance of power if the abductors seem to be weak. Some patients have been seen, however, in whom complete adductor tenotomies have been done and in whom there is complete flaccidity in the abductors. Their ability to stand is entirely lost by the operative procedure.

Fusion of the joint and operation to block the joint are sometimes used but should be worked out with great care, as the pull of a spastic muscle against a blocked joint will eventually modify the block to such an extent that it might as well never have been done. More recently the technic of transplantation of muscles in the spastic extremity has been developed. Transplantation of spastic muscle is somewhat different from transplantation of muscle in the case of poliomyelitis, as the operative procedure itself so increases the irritability of the muscle postoperatively that unless it is very firmly transplanted the tendency for it to pull loose is great. There is probably a great future in this field in the treatment of true spastic paralysis. For example, the

transplantation of the tensor fasciae femoris laterally from its point of origin on the pelvis to the vastus lateralis has in my hands been satisfactory in counteracting the tendency to internal rotation so commonly seen in spastic legs. The muscle loses, by this procedure, its function of internal rotation but acts as a tensor of the vastus lateralis and thus aids to some extent in the ease with which extension of the knee is accomplished. This particular procedure I have now done four or five times and have found great improvement, but it should be done only after a careful evaluation of the power in the external rotators. Of course there is no limit to the possibilities in transplantation of muscle both in the arms and in the legs, and the operation, combined with partial neurectomy or other balancing procedure, can accomplish considerable improvement surgically. However, surgical intervention is really only a step in the treatment of the spastic patient. It should never be considered that he can be cured by surgical measures alone.

For the athetoid patient, on the other hand, little indeed can be accomplished by surgical treatment. Athetosis is not always fixed, and if an athetoid muscle is cut or eliminated by neurectomy or other procedure it is common to find the athetosis jumping to muscles which have not been previously affected by it. This is not always true but is true in so large a percentage of the cases that surgical procedures on athetoid muscles have at the present time been given up.

The basic principle in the treatment of athetosis is relaxation. As has been said before, athetosis disappears in sleep, and the more nearly an athetoid patient can be relaxed the less will be the amplitude of swing of the involuntary contractions in the muscles. Reedu- cation by teaching voluntary motion from the relaxed position is then utilized, and it produces great improvement. Even in cases of moderate athetosis, gradual elimination of the athetosis has been seen to such an extent that the only remnants of it were somewhat feeble contractions in certain muscles which do not actually bring about motion in the joints. Of course the problem is much greater when the athetosis is distal than when it is proximal.

For severe athetosis the only procedure at present known which is of any help except to induce relaxation is the operative procedure described by Putnam, section of the lateral columns of the cord. This eliminates a large part of the athetosis from the extremities, but there is considerable risk in the operation and cases should be selected with great care before a decision is made with regard to the use of the procedure.

NATURE OF THE PROBLEM

The general care, therefore, of the spastic and of the athetoid patient and of the patient with any other type of cerebral palsy is rather complicated. There must be a program correlated by the orthopedist, the pediatrician, the neurologist, the physical therapist and the speech expert for the motor side and by teachers accustomed to handling the problems of the handicapped on the educational side, and psychologic aid is necessary in adjusting these children and their behavior to the world at large. Physical therapy in the primary stages of the condition should be followed by occupational therapy when the primary motions can be performed and grouped. This should give way to vocational training when the patient is old enough to determine the line in which he is to be trained. The

program constitutes an effort to parallel the mental education of the normal child with a program for physical reeducation which for the normal child is to a great extent automatic.

It is unfortunate that children cannot be born mentally with the equivalent of a high school education. A parallel may be drawn that normal children are born with the equivalent of a physical high school education. It is not considered surprising that it is necessary to spend twelve years giving a child a mental education equivalent to that of a high school graduate, and the point of view toward the cerebral palsies should be that it is necessary to parallel this with physical education over a long period in order to bring in the abilities as they arise and train them as they are developed.

3038 St. Paul Street.

POLIOMYELITIS VIRUS IN HUMAN STOOLS

JAMES D. TRASK, M.D.

A. J. VIGNEC, M.D.

AND

JOHN R. PAUL, M.D.

NEW HAVEN, CONN.

More than twenty-five years ago Kling, Pettersson and Wernstedt¹ in Sweden were successful in isolating the virus of poliomyelitis from the human intestinal tract. They found it in several active cases of the disease and in convalescence. This result was soon repeated in a single fatal case by Kling and Levaditi,² and in this country another single instance of its recovery during convalescence was described by Sawyer³ in 1915.

During subsequent years no one seems to have been able to repeat this work until 1937, when Harmon⁴ made brief mention of five successful attempts in which the virus was obtained from the rectal washings of four patients. Kramer⁵ has stated that he also has succeeded with similar material.

The present report records our experiences in testing material from the intestinal tract and nasopharynx during a small epidemic of poliomyelitis which occurred in 1937. In it we describe (a) three cases of mild abortive poliomyelitis in each of which the virus was recovered once from the nasopharynx and (b) another case of a similar type of illness in which the virus was repeatedly recovered from the stools.⁶ We believe that the significance of the latter finding lies not so much in the confirmation of the now established fact that poliomyelitis may escape from the human body by the intestinal route as in the type of case which yielded the virus from this site.

Aided by grants from the President's Birthday Ball Commission for Infantile Paralysis Research.

From the Departments of Pediatrics and Medicine, Yale University School of Medicine and the New Haven Hospital and Dispensary.

1. Kling, C., Pettersson, A., and Wernstedt, W.: Experimental and Pathological Investigations, Communications Inst. méd. Etat Stockholm, 3:5, 1912.

2. Kling, C., and Levaditi, Constantin: Etudes sur la poliomyélite aiguë épidémique, Ann. Inst. Pasteur 27:718 (Sept.) 1913.

3. Sawyer, W. A.: An Epidemiological Study of Poliomyelitis, Am. J. Trop. Dis. & Prev. Med. 3:164 (Sept.) 1915.

4. Harmon, F. H.: The Use of Chemicals as Nasal Sprays in the Prophylaxis of Poliomyelitis in Man, J. A. M. A. 109:1061 (Sept. 25) 1937, and other data concerning details of isolation experiments kindly supplied by Dr. Harmon.

5. Kramer, S. D.: Personal communication to the authors.

6. A preliminary report of this case has already appeared: Trask, J. D., Vignec, A. J., and Paul, J. R.: Isolation of Poliomyelitis Virus from Human Stools, Proc. Soc. Exper. Biol. & Med. 35:147 (Feb.) 1938.

CLINICAL MATERIAL AND METHODS

During the fall of 1937 a small outbreak of poliomyelitis occurred in and about the cities of New Haven and Meriden, Conn. Cases from this outbreak furnished our clinical material, and the results of twenty-two tests on fourteen patients appear in table 1. The results of nine tests on material from the nasopharynx and of thirteen on the stools are shown.

The Virus from the Nasopharynx.—Washings from the nasopharynx were obtained and tested during this epidemic from ten children (one of them was a contact

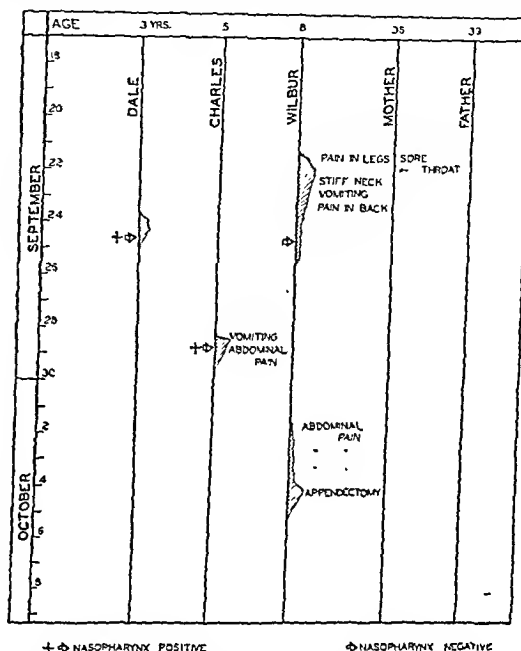


Chart 1.—Schematic diagram of Ch. family, which is composed of the parents and three children. Each individual in the family is portrayed by a vertical line; their ages appear at the top. Shaded areas on the vertical lines roughly show the amount of fever present during their illnesses. Dates along the left margin indicate the period with which we are concerned. Members of this family had been well during August and early September, although several cases of poliomyelitis had occurred in the neighborhood within this period. September 21, Wilbur, the oldest child, had fever, pain in the legs and stiffness of the neck. A diagnosis of nonparalytic poliomyelitis was made. Nasopharyngeal washings were obtained from this child on September 25, and also from the youngest child Dale (see arrows) who had acute fever for two days without other symptoms at this time. Four days later the third child, Charles, had fever, vomiting and abdominal pain, which subsided rapidly. Washings were obtained from him September 29, on which day his spine was somewhat stiff. One week after Wilbur's first symptoms had subsided he began to have abdominal pain and slight fever. October 5 an acutely inflamed appendix was removed. What relationship his appendicitis bore to the preceding illness is not clear. Unfortunately the pathologic specimen was placed in solution of formaldehyde; otherwise an attempt to isolate poliomyelitis virus from it would have been made.

and so does not appear in table 1). From these ten nasopharyngeal tests three positive results are recorded.

The first positive result in which the virus was recovered from the nasopharynx in this series was obtained from a boy of 7 years (John Wn.). He was the younger of two children in the same family (John and Robert), both of whom sustained fairly typical attacks of abortive poliomyelitis in mid-September 1937. The child John became ill September 15 with fever, drowsiness and a stiff neck. September 17 his brother Robert developed similar symptoms; namely, chills, fever, sore throat, with exudate on the tonsils, and a stiff back and neck. Neither illness lasted more than two days and in neither did paralysis develop. The nasopharyngeal washings that yielded the virus were obtained from John within twenty-four hours of the onset of his illness. Robert was not tested.

The other two patients in this series whose nasopharyngeal washings yielded the virus were members of the same family.⁷ As the clinical circumstances are more complicated than those just described in the Wn. family, they will be presented in the form of a diagram (chart 1).

Details of the technical procedures used for the determinations in this series of nasopharyngeal washings will appear in another publication. It may suffice to say that the nose and throat of the children were irrigated with sterile distilled water; the return fluid was collected, and to it 10 per cent ether was added as a bactericidal agent, prior to its inoculation into the monkey. Some of the washings were also concentrated by evaporation at low temperatures, according to a method first used by Kramer and his associates⁸ and recently modified by one of us.⁹ Only fresh animals were used for these inoculation tests. Daily temperature and exercise records were kept on all inoculated monkeys for a period of four weeks, unless it was found necessary to kill them earlier. If an animal showed any sign of experimental poliomyelitis or signs remotely suggesting experimental poliomyelitis, it was

of the virus in the throat has also served as a diagnostic test for detecting this mild form of the disease. This clinical picture is still inexact, and it is possible that in the absence of special laboratory tests, such as the demonstration of the virus, mild abortive poliomyelitis can be diagnosed only during an epidemic of poliomyelitis; that is, in close association with more definite cases. On the basis of our own experiences with this mild form of poliomyelitis, however, it can be described as an acute illness generally lasting from two to five days and characterized by fever, often by headache and vomiting and occasionally by abdominal pain and sore throat or by a stiff neck but often by a stiff back, which is detected only if one systematically attempts to elicit the "spine sign" by flexion of the vertebral column. Examinations of the spinal fluid have failed to show a pleocytosis in many of those tested.¹¹ We believe that these ill defined and brief types of illness are by far the commonest form of poliomyelitis. Indeed, they may outnumber the paralytic cases six or eight times,¹² and, as such, they are perhaps of more significance from an epidemiologic standpoint than are the paralytic cases.

TABLE 1.—Results of Nine Tests for Poliomyelitis Virus in the Nasopharynx and Thirteen in the Stools

Type of Case	Nasopharynx						Stool								
	Day of Disease					Total	Day of Disease							Total	
	1	2	3	4-6	7-10		1	2	3	4-6	7-14	15-25	26-75		76-100
Abortive.....	2/2*	1/1	0/1	0/1	0/1	3/6	...	1/1	...	...	1/1	1/1	0/1	0/4	3/ 8
Paralytic.....	...	...	...	0/1	0/2	0/3	...	...	...	0/1	0/2	0/2	...	...	0/ 5
Total.....	2/2	1/1	0/1	0/2	0/3	3/9	...	1/1	...	0/1	1/3	1/3	0/1	0/4	3/13

* 2/2 indicates that, from two out of two satisfactory tests, poliomyelitis virus was recovered.

killed at what seemed to be an appropriate time; histologic sections were examined from the medulla, cervical, thoracic and lumbar regions of the spinal cord, and an attempt was immediately made to pass the virus to another monkey. If any animal died during the four week period of observation from some cause other than poliomyelitis, the test was considered unsatisfactory. This occurred once with nasopharyngeal washings and five times with stools.

ABORTIVE POLIOMYELITIS

Apart from the general interest of finding the virus in the nasopharynx in these three cases is the fact that its presence there may be regarded as a diagnostic test for abortive poliomyelitis. In other words, in the absence of this finding at least two of these cases (exemplified by Dale and Charles Ch. in chart 1) might have been disregarded as unimportant or at least of uncertain type. For this reason we have examined with care the symptoms manifested in their illnesses and of other similar illnesses which occurred in this epidemic. The clinical picture which they presented has been found to be about the same as that which we have noted in previous epidemics¹⁰ and in which the presence

It is of particular interest, therefore, that the same type of case (the mild, abortive type) is also capable of yielding the virus from the stools.

THE VIRUS IN THE STOOLS

Thirteen stool specimens from eight patients were satisfactorily tested and three of these (all from the same child) yielded the virus. Again, the child in question was a member of a family¹³ in which another case of poliomyelitis had occurred. The clinical circumstances which transpired in this family group are presented in chart 2. Here is shown a family with three children, in which the oldest child (Teddy) had contracted severe, paralytic poliomyelitis early in October, and the youngest child (Daniel) contracted what appeared to be abortive poliomyelitis (onset October 18). Nasopharyngeal washings and stool specimens were obtained from all three children October 18 and 19. Some of the tests on this material were unsatisfactory, but from the diagram in chart 2 it will be seen that Daniel's first stool specimen, obtained on the second day of his disease, yielded the virus of poliomyelitis, and that this finding was repeated on two subsequent stools obtained on the eleventh and twenty-fourth days of his disease respectively. The positive stools from this child have been designated as 1, 2 and 3, the negative ones as 4 and 5. The virus was not recovered from

11. Trask, J. D., and Harper, P. A.: Diagnostic Problem in Poliomyelitis: Consideration of Typical and Suggestive Cases Showing Normal Spinal Fluid, *Yale J. Biol. & Med.* 5:155 (Dec.) 1932. Paul, Salinger and Trask.^{10a} Paul, Trask and Webster.^{10c}

12. Paul, J. R., Salinger, Robert, and Trask, J. D.: Studies on the Epidemiology of Poliomyelitis: II. Incidence of Abortive Types of Poliomyelitis, *Am. J. Hyg.* 17:601 (May) 1933.

13. Dr. Morris Goldstein of New Haven gave us the privilege of studying this family.

7. Dr. A. A. Tower of Meriden, Conn., gave us the privilege of studying this family.

8. Kramer, S. D.; Sobel, A. E.; Grossman, L. H., and Hoskwith, B.: Survival of the Virus of Poliomyelitis in the Oral and Nasal Secretion of Convalescents, *J. Exper. Med.* 64:173 (Aug.) 1936.

9. Paul, J. R.: Method for the Concentration of Poliomyelitis Virus in Nasopharyngeal Washings, *J. Bact.* 35:493 (May) 1938.

10. (a) Paul, J. R.; Salinger, Robert, and Trask, J. D.: "Abortive" Poliomyelitis, *J. A. M. A.* 98:2262 (June 25) 1932; (b) Studies on the Epidemiology of Poliomyelitis: I. Methods and Criteria for the Detection of Abortive Poliomyelitis, *Am. J. Hyg.* 17:587 (May) 1933. (c) Paul, J. R.; Trask, J. D., and Webster, L. T.: Isolation of Poliomyelitis Virus from the Nasopharynx, *J. Exper. Med.* 62:245 (Aug.) 1935.

any of the nasopharyngeal or stool specimens from other members of the family. Unfortunately, the monkey receiving the nasal washings from Daniel died of streptococcal meningitis.

Samples of the three positive and two negative stools (or extracts from them) which had been obtained from Daniel Sk. were subsequently kept in the refrig-

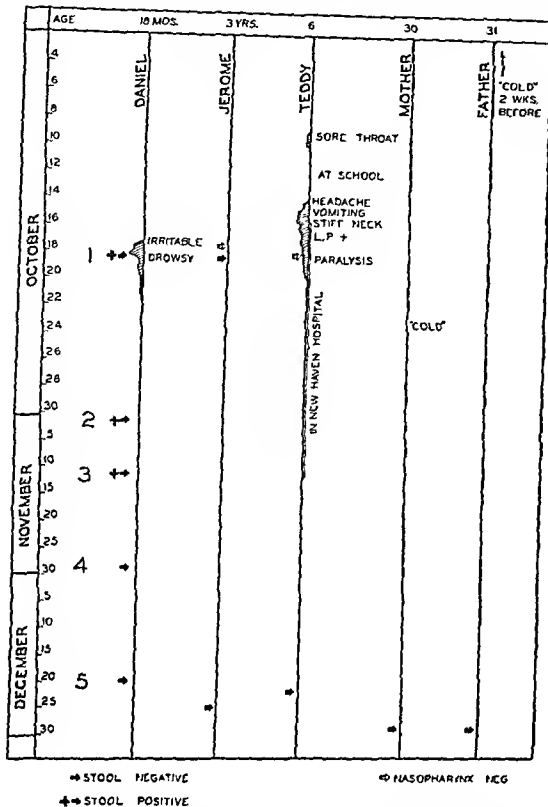


Chart 2.—Schematic diagram of Sk. family. The method of portraying events is the same as in chart 1. All members of the family had been well just before the onset of Teddy's illness, except that on September 24 or 25 the father "had a cold." October 8, Teddy, the oldest child, had a sore throat, and a week later he was hospitalized for severe paralytic poliomyelitis. Some of the details of this illness appear on the chart. L. P. + indicates that a lumbar puncture (performed October 17) revealed a pleocytosis of 160 cells. The youngest child, Daniel, aged 18 months, became ill October 18 with fever and listlessness. The fever continued for about four days. No evidence of muscular weakness was detected; his spine was slightly stiff October 20 and 21. Jerome, the middle child, remained well. The time at which stool specimens and nasopharyngeal washings were obtained appear in the form of arrows.

erator for some days or weeks, and the results of thirteen tests on material preserved from these five specimens appear in table 2. The fact that some of the tests on this preserved material were positive weeks after the collection of the specimens testifies to an extraordinary stability of poliomyelitis virus in the medium of human fecal material. This is another point of epidemiologic significance.

Methods of Preparing Stools for Inoculation.—Our first few attempts were exploratory,¹⁴ involving the trial of various procedures for preparing extracts of fecal material prior to its inoculation into monkeys. Brief details of these various procedures appear in table 2. Some of the technical details, which are omitted here, have been mentioned in the preliminary report of this work already referred to.⁵

In the first experiment (table 2, stool specimen 1 a) the following procedure was used: To 90 cc. of a dilute aqueous extract of Daniel's first stool (October

19) 13.5 cc. of anesthetic ether was added as a bactericidal agent to make an approximate 15 per cent suspension. This was allowed to stand in a tightly stoppered flask overnight in the refrigerator. (Aerobic cultures on blood agar plates taken from the specimen at this time showed no growth.) A portion of this extract was then concentrated to about one fifth of its original volume by evaporation at low temperatures in the Flösdorf-Mudd apparatus.¹⁵ The concentrate represented 12 cc. One half of it was then inoculated into monkey 8-33, the doses being 1 cc. intracerebrally and 5 cc. intraperitoneally.

In later experiments (and also in a few experiments made at an earlier date¹⁶) we have found that material prepared essentially in the manner just described is often lethal for the monkey. Even though the inoculum may appear to be bacteria free, the animal often dies from necrosis of the brain, meningitis or bacteremia. In fact, of eight monkeys injected intracerebrally in this series of tests, five died prematurely. This fact led us to substitute intraperitoneal inoculations for intracerebral, because the peritoneal cavity will readily allow the injection of larger amounts of stool extracts than can be introduced into the brain, and because the peritoneum seems better able to withstand the immediate effects of this procedure than does the brain. By the intraperitoneal route, doses as large as 30 cc. of

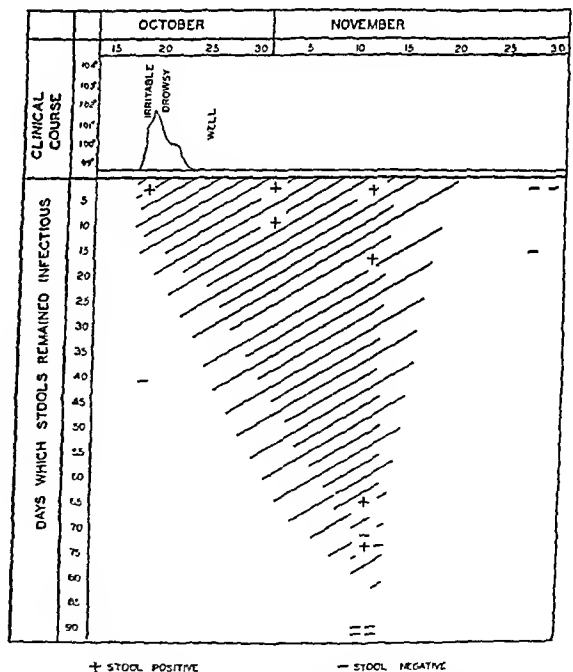


Chart 3.—Schematic diagram to indicate the period during which Daniel Sk.'s stools remained infectious. The clinical course of the mild illness is shown at the top. Not only did stools passed on the twenty-fourth day of illness contain poliomyelitis virus but the virus remained viable in this medium over a period of seventy-two days. Seventeen tests on Daniel's stools are shown. The distribution of the plus signs enable us to outline by the shaded area a theoretic period during which stools in this mild illness remained infectious under the conditions described.

aqueous stool extract (originally containing 15 per cent ether) have been injected into one animal (table 2, stool specimen 3, tests b, c and f). Of twenty-seven

14. Flösdorf, E. W., and Mudd, Stuart: Procedure and Apparatus for Preservation in "Lyophilic" Form of Serum and Other Biological Substances, *J. Immunol.* 29: 389 (Nov.) 1935.

15. Flösdorf and Mudd.¹⁴ Paul.⁷
16. Our only previous attempts to inoculate stool extracts intracerebrally were made in 1932. Seven monkeys were inoculated at this time with stool specimens from abortive cases of poliomyelitis. Six of these tests proved unsatisfactory because the monkeys died within eleven days of the inoculation. The seventh stool test was negative. Nine (previously unreported) tests were also made with nasopharyngeal washings at this time. They were collected from patients with abortive attacks within the first ten days of their illness. All of these tests were negative.

monkeys thus inoculated intraperitoneally only three have died prematurely. By this means (intraperitoneal inoculation of human stool extract) experimental poliomyelitis was produced in the monkey three times. This infectivity of human poliomyelitis virus for the monkey by way of an extraneural route (i. e., without intracerebral or intraneural inoculation) supplements our recent experiences with the intravenous¹⁷ and intradermal¹⁸ infectivity possessed by some strains of poliomyelitis virus.

A third modification of the technical procedures for preparing the inoculum was also used in some of the preserved extracts from stool specimen 3 (tests *d*, *e*, *j*, *k*). Here the material to be inoculated was precipitated with acetone, following a method used by Howitt,¹⁹ and the resuspended precipitate was inoculated intraperitoneally. This was done with the hope

point out that the diagram of the infectious aspect of this mild illness suggests a picture of an iceberg, seven eighths of the ominous structure of which is submerged below the surface of "clinical perception."

IDENTIFICATION OF THE VIRUS

Ever since the discovery of the poliomyelitis virus in 1909 there has been some confusion as to how frequently this virus has actually been isolated from a human source other than the spinal cord. Such confusion has been the natural result of changing criteria for the identification of poliomyelitis virus as a result of which some of the past claims for its isolation have now long been discarded. But it is still difficult to say which results should be accepted and which discarded, for there are no set diagnostic rules unless one makes them oneself. This we shall attempt in this report, not

TABLE 2.—Methods and Results of Animal Inoculations with Daniel Sk.'s Stool Extracts

No. of Stool Specimens (Chart 3 and Text)	Date Received	Day of Disease	Preparation	Days of Preservation	Route of Inoculation and Dose	Inoculated Monkey's No.	Result			Passage Monkey's No.	Result in Passage Animal
							Fever	Paralysis	Lesions		
1 a.....	10/19/37	2	Conc. 5x	3	{ I. C. 1 cc. I. P. 5 cc. }	8-33	7	7	++	8-48	Poliomyelitis
b.....	10/19/37	..	Conc. 5x	41	{ I. P. 4 cc. I. C. 1 cc. }	8-68	..	..	....	8-62	Died, pneumonia
2 a.....	11/ 1/37	11	Conc. 3x	2	{ I. C. 1 cc. I. P. 5 cc. }	8-49	6	8	++	8-64	Died, brain abscess
b.....	11/ 1/37	..	Conc. 3x	10	I. P. 6 cc.	8-60	7	15	+	8-66	Died, brain abscess
3 a.....	11/12/37	23	Conc. 5x	3	{ I. C. 1 cc. I. P. 6 cc. }	8-63	Died, brain abscess			8-97	Poliomyelitis
b.....	11/12/37	..	Unconc.	17	I. P. 30 cc.	8-69	10	14	+	8-63	Poliomyelitis
c.....	11/12/37	..	Unconc.	66	I. P. 30 cc.	9-01	9	13	++	9-12	Poliomyelitis
d.....	11/12/37	..	Act. ppt.	74	I. P. 9 cc.	9-06	8	13	++	9-13	Died, pneumonia
e.....	11/12/37	..	Act. ppt.	74	I. P. 15 cc.	9-10	..	..	—	9-21	Poliomyelitis
f.....	11/12/37	..	Unconc.	74	I. P. 30 cc.	9-09	13	..	++	9-22	Died, meningitis
g.....	11/12/37	..	Conc. 10x	72	I. P. 4.4 cc.	9-30	..	..	..	9-23	Negative for encephalitis
h.....	11/12/37	..	Unconc.	92	I. P. 20 cc.	9-23	..	..	—	9-27	Poliomyelitis
i.....	11/12/37	..	Unconc.	92	I. P. 20 cc.	9-27	..	..	..	9-24	Died, meningitis
j.....	11/12/37	..	Act. ppt.	92	I. P. 2.2 cc.	9-24	12	..	—	9-25	Negative for encephalitis
k.....	11/12/37	..	Act. ppt.	92	I. P. 2.2 cc.	9-25	..	..	..	9-74	Died, peritonitis
4 a.....	11/29/37	43	Conc. 3x	3	I. P. 10 cc.	8-82	..	..	..	8-84	..
b.....	11/29/37	..	Unconc.	16	I. P. 10 cc.	8-82	..	..	..	8-83	..
5 a.....	12/20/37	64	Conc. 3x	3	I. P. 16 cc.	8-84	..	..	..	..	..
b.....	12/20/37	..	Unconc.	3	I. P. 16 cc.	8-83	..	..	..	..	..

Conc. 5x = stool extract concentrated to about one-fifth its original volume by evaporation at low temperatures; I. C. 1 cc. = Intracerebral inoculation of 1 cc.; I. P. = intraperitoneal inoculation; Fever: 7 = fever began 7 days after inoculation; Paralysis: 7 = paralysis began 7 days after inoculation; Lesions: ++ = histologic lesions in spinal cord extensive; Act. ppt. = acetone precipitate.

that a concentration of virus might be thus effected. Material treated in this manner proved infectious in one instance (test 3 *d*, monkey 9-06).

Regardless of the methods employed, however, the virus was repeatedly found to be viable in the aqueous stool extracts from Daniel Sk. It was actually isolated six times. In one instance it was found to be viable in the stool seventy-four days after the collection of the stool specimen! The persistence of the virus in the stools not only in the patient during convalescence but its persistence *in vitro* appears in chart 3. The purpose of this chart is to illustrate the epidemiologic implications of this case. In it one sees the prolonged infectiousness of the child's stools, which existed *in vivo* and *in vitro*. This has been such an impressive feature to us, in view of the mildness of the clinical case involved, that we feel that its significance cannot be overemphasized at this time. It may even not be amiss to

because we believe ourselves to be arbiters in the matter but because some sort of criteria are necessary for any critical discussion of the subject.

In our own previous work on the nasopharynx in poliomyelitis²⁰ and in the present report, criteria for the recovery of the poliomyelitis virus from this site have rested on the following features: (a) on the production of a "clinical picture" in the inoculated monkey which is compatible with that of the experimental disease; i. e., after an appropriate incubation period there is the development of a train of characteristic symptoms usually exemplified by fever, excitement, tremor, ataxia, weakness and paralysis, the latter being generally associated with a fall in temperature; (b) when the animal is killed, lesions typical of experimental poliomyelitis must be found in the region of the anterior horn of the spinal cord, in lumbar as well as in cervical levels; i. e., lesions confined to the medulla are insufficient. Furthermore these lesions should be unequivocal and, besides presenting evidence of cell damage in the anterior horn, there must be perivascular infiltrations with mononu-

17. Trask, J. D.; Paul, J. R.; German, W. J., and Beebe, A. R.: Viruses of Poliomyelitis, *Tr. A. Am. Physicians* 52: 366, 1937.

18. Trask, J. D., and Paul, J. R.: Skin Infectivity of Poliomyelitis Virus, *Science* 57: 44 (Jan. 14) 1938.

19. Howitt, B.: Poliomyelitis Virus: Results of Treating with Certain Chemicals and with Heat, *Proc. Soc. Exper. Biol. & Med.* 28: 158 (Nov.) 1930.

20. Paul, Salinger and Trask.¹⁷ Paul, Trask and Webster.²

clear cells; (c) passage of the strain to a second monkey must be successfully accomplished.

None of the positive tests on human material described in this report or in any of our previous reports have been designated as yielding poliomyelitis virus without fulfilling these three criteria.²¹ A fourth criterion (d) which has been met in some of the tests in these experiments is that the suspected strain should not produce encephalitis or myelitis in laboratory animals other than the monkey; i. e., on intracerebral inoculation of rabbits, guinea pigs and mice (table 2). Such tests may be helpful in avoiding the possibility of confusing the virus of poliomyelitis with that of lymphocytic choriomeningitis, or perhaps with other viruses which are capable of producing an encephalitis in these animals.

For the further identification of this Sk. strain from the stools we have not yet^{21a} resorted to the use of neutralization (and reinoculation) experiments with other strains of poliomyelitis virus because of the questionable diagnostic value of this procedure. This questionability is due to the fact that well marked immunologic differences between some of the better known strains of poliomyelitis virus have been described.²²

Reference has already been made to the fact that there has been some confusion as to how frequently the virus of poliomyelitis has actually been isolated from the human nasopharynx or the intestinal tract. This confusion is justified and difficult to dispel. If the somewhat rigid criteria for the identification of poliomyelitis virus, which we have outlined in this paper, are applied to most of the data existent in the literature, very few of the previous reports of its recovery from extraneural human sources would be found to be acceptable. Nevertheless, all the tests, whether positive in their outcome or questionable or negative seem to be worthy of reanalysis at this time because it is important to determine whether the literature reveals information as to whether it has been easier in the past to isolate the virus from the nasopharynx than from the intestinal tract.²³

21. In one "negative" test in this series on stool extracts (3 f) two of our criteria were partially fulfilled. In the test animal (monkey 9-09) fever developed but paralysis was not detected. Extensive lesions were subsequently found in the spinal cord, but unfortunately material from this animal was not saved in glycerin and so a passage could not be tried.

21a. Since this paper was submitted for publication these tests have been partially completed and will be reported on subsequently.

22. Trask, J. D.; Paul, J. R.; Beebe, A. R., and German, W. J.: Viruses of Poliomyelitis: Immunological Comparison of Six Strains, *J. Exper. Med.* 65: 687 (May) 1937.

23. Sources from which this series of tests on the nasopharyngeal and intestinal tract were drawn include the following:

Rosenau, M. J., and Sheppard, P. A. E.: Anterior Poliomyelitis: Attempts to Transmit the Disease to Monkeys by Inoculation with the Nasal, Pharyngeal and Buccal Secretions of Eighteen Human Cases, *Bull. State Bd. Health Massachusetts* 6: 145 (May) 1911.

Strauss, L.: Inoculations of Nasal Secretions from Patients with Acute Poliomyelitis, *J. A. M. A.* 56: 1192 (April 22) 1911.

Landsteiner, Karl, Levaditi, Constantin, and Pastia, C.: Recherche du virus dans les organes d'un enfant atteint de poliomyelitis aiguë, *Semaine méd.*, Paris 31: 296 (June 21) 1911.

Kling, Petterson and Wernstedt.¹

Kling and Levaditi.²

Lucas, W. P., and Osgood, R. B.: Transmission Experiments with the Virus of Poliomyelitis, *J. A. M. A.* 60: 1611 (May 24) 1913.

Dubois, P. L.; Neal, J. B., and Zingher, A.: Experimental Studies in Poliomyelitis, *ibid.* 62: 19 (Jan. 3) 1914.

Sawyer.³

Taylor, E., and Amoss, H. L.: Carriage of the Virus of Poliomyelitis, with Subsequent Development of the Infection, *J. Exper. Med.* 26: 745 (Nov.) 1917.

Flexner, Simon, and Amoss, H. L.: Persistence of the Virus of Poliomyelitis in the Nasopharynx, *J. Exper. Med.* 29: 379 (April) 1919.

Levaditi, Constantin, and Willemin, L.: Etude de l'épidémie de poliomyelitis du département du bas-Rhin, *Ann. Inst. Pasteur* 46: 233 (Feb.) 1931.

Paul, Salinger and Trask.¹⁹

Footnote 16.

Paul, Trask and Webster.^{19c}

Kramer, Sobel, Grossman and Hoskwith.¹

Harmon.⁴

Stillerman, Maxwell, and Brodie, Maurice: Virus Isolated from Nasal Washings During Acute Poliomyelitis in New York City in 1935, *Proc. Soc. Exper. Biol. & Med.* 37: 382 (Nov.) 1937.

This is difficult, for it is not known with any degree of accuracy what the ratio of positive to negative results has been in tests of this kind, because failure to find the virus in a given site may be due more often to an inadequate method of demonstrating it than to its absence. Furthermore, many negative attempts have been casually described and many have probably not been published at all. From the nasopharynx, however, one finds that some 241 tests are recorded in the literature which can be used in estimates on active cases or convalescents. (This includes a few tests done on tonsillar emulsions from fatal cases. It does not include tests in which the approximate day of the disease is not specified, or the many tests that have been done on healthy contacts.) To these 241 tests are added those reported in this article, which appear in table 1, and also a small series of previously unpublished tests which were made by two of us in 1932.¹⁶ Using a good deal of liberality in the interpretation of some of the results of this whole series of 260 nasopharyngeal tests, one finds that thirty of them offer acceptable evidence of the isolation of poliomyelitis virus from the nasopharynx. On this basis we also find that roughly about 15 per cent of these tests on the nasopharynx have been positive if made during the first ten days of the disease, and 5 per cent have been positive if made in the subsequent six weeks.

With stools or colonic washings a smaller number of experiments are recorded. About eighty-six tests are described (including our own) and from a similar rough estimate we find that about 27 per cent have yielded the virus in the first ten days of the disease and about 12 per cent during the first few weeks of convalescence. In other words, this series reveals the surprising fact that it seems to have been almost twice as easy to find the virus in the stools during early stages of the disease as it has been to find it in the nasopharynx, and more than twice as easy during late stages.

These facts force us to reconsider whether poliomyelitis may not be, to some extent at least, an "intestinal" disease. By this term we do not imply that the virus necessarily enters the body by way of the gastrointestinal tract, for the data at hand do not give any information on this point; they merely emphasize the importance of the feces as a medium of exit. There are a number of supplementary epidemiologic features which this reconsideration of poliomyelitis as an intestinal disease brings up. Foremost among them is the seasonal prevalence of poliomyelitis in temperate climates. Like typhoid and dysentery, it is essentially a summer disease. Another feature, perhaps not so well known, is the presence of lesions in association with the intestinal tract, such as mesenteric lymphadenitis or lesions in the lymphoid tissues of the lower part of the ileum and the cecum. Some of these seem to have been noted more than fifty years ago.²⁴ Recently they have received renewed attention from Landon and Smith,²⁵ who have described them in their large series of human autopsies. It is unknown, of course, what the pathogenesis of such lesions is or what their actual relationship to poliomyelitis virus may be, but at least there seems to be enough evidence here to attract attention to this part of the body in an effort to unravel some of the obscurities which exist with regard to the

24. Rissler, J.: Zur Kenntniss der Veränderungen des Nervensystems bei Poliomyelitis anterior acuta, *Nord. med. Ark., Stockholm* 20, 1893, No. 22.

25. Landon, J. F., and Smith, L. W.: Poliomyelitis, New York, Macmillan Company, 1934, p. 25.

pathogenesis of human poliomyelitis. It also may not be amiss to say that many of the implications here set forth go to support the contentions of Toomey,²⁶ who from a different type of evidence has long supported the idea that poliomyelitis is an intestinal disease.

But whether poliomyelitis is an intestinal disease or whether it has a "gastrointestinal phase" is not our main thesis. One of the main points is that all four cases described in this report which yielded the virus either from the nasopharynx or from the stools were abortive cases. This fact continues to emphasize, to us at least, that the crux of many problems of the epidemiology of poliomyelitis may well rest on the much neglected abortive case, not only during its acute but also during its convalescent stage. That the stools in these mild and generally unrecognized cases (which may outnumber the paralytic cases eight times) may be infectious over a period of three weeks places these patients almost in the status of "healthy carriers." Furthermore, that the virus may survive in vitro in the stools for ten weeks suggests that during an epidemic a high degree of pollution of sewage with poliomyelitis virus could readily occur. In fact, one could almost term this hypothetical degree of sewage pollution as "massive."

SUMMARY

1. Poliomyelitis virus was found in four clinical cases of poliomyelitis: three from the nasopharynx in three cases and three times from the stools in one case.

2. Human stool extract for inoculation into monkeys does not have to be injected intracerebrally in order to produce the experimental disease.

3. The attacks in all cases which yielded the virus were mild and nonparalytic. It is probable that some of the attacks might not have been regarded as examples of poliomyelitis without this finding.

4. The child who showed virus in the stools was ill for only three or four days, and yet the virus persisted in the feces for at least twenty-four days from the onset of his mild illness. It also remained viable for ten weeks in one of his stools which was kept in the refrigerator. Such facts suggest that during an epidemic of poliomyelitis these common, mild and often unrecognized forms of the disease may be responsible for a high degree of pollution of sewage with poliomyelitis virus.

26. Toomey, J. A.: Active and Passive Immunity and Portal of Entry in Poliomyelitis, *J. A. M. A.* 109:402 (Aug. 7) 1937; also earlier papers on poliomyelitis by Toomey.

Time and Ethical Standards.—The medical profession has never allied itself as a profession with any political group. It has and still does recognize the fact that political entanglements mean restrictive hobbles on the legs of medical progress. It asks only to be left free to ply its craft, unhampered by forces unqualified either by training or ethical standards to say what is best for the patient. These ethical standards have stood the test of time and must be maintained. It is a fact that political domination of medical practice is having tremendously devastating influence on the type and quality of medical service wherever such conditions apply. Political expediency and bureaucratic control do not tend toward elevation of professional standards. America was not purged of low-grade medical schools and diploma mills until the medical profession took a firm stand and established certain requirements for medical schools. It was a long, slow fight against political forces to rid the country of the menace of inadequately trained physicians. This was primarily in the interest of the public.—Borzell, Francis F.: *The Medical Profession and the Social Worker, Pennsylvania M. J.* 41:683 (May) 1938.

CUTANEOUS ABSORPTION OF SEX HORMONES

CARL R. MOORE, PH.D.

JULE K. LAMAR, PH.D.

AND

NAOMI BECK, A.B.

CHICAGO

Despite some previous reports on the effects of hormones when applied to external surfaces,¹ there is yet a lack of appreciation of the readiness with which such substances are taken up by the skin and become effective in the body. This is of importance because hormones are at present available in ordinary commercial items such as face creams. A realization of their ready entrance into the body and some measure of their effects after entering the body should therefore be understood. The following brief account is devoted to presenting some of our experiences in applying both androgens and estrogens in a lanolin-like menstruum or cream to the skin of experimental animals.

APPLICATION OF ANDROGENS

We have employed testosterone and testosterone propionate in a concentration of 50 mg. per ounce of cream.² Treatment has usually been limited to one daily application on areas of shaved skin of from 2 to 6 square inches on the back of the neck and shoulders or on the belly. Shaving is not essential, since rubbing the substance into the hair over the same area each day is almost equally effective. Weighed or measured amounts of cream have been such that on the average 0.6 mg. of the pure chemical androgen is contained in each application.

1. Normal male guinea pigs when properly stimulated on the head by an alternating electric current invariably void a seminal discharge containing spermatozoa and the mixed secretions of the accessory reproductive glands. The ejaculate becomes a coagulated, rubber-like mass within five minutes after its discharge. Castrated males are incapable of ejaculation, since the function of the accessory reproductive glands is under male hormone control.³

Guinea pigs castrated before sexual maturity and treated one year later received daily applications of ointment on a small area of skin on the back of the neck. Coagulable ejaculates were obtained on electrical stimulation by the seventh day of treatment. Stimulations each successive week resulted in increased amounts of ejaculate up to the fifth stimulation, when ointments were discontinued. Subsequent weekly discharges were progressively smaller and disappeared on the fourth week after cessation of treatment.

2. Daily applications of ointment on the neck of castrated male rats, on bare skin or in the hair, offered a complete substitution for the internal secretion of the testes, as judged by the fresh weights of seminal vesicles and prostate gland.

Ten male rats, 4 months of age, were grouped so that eight animals were castrated. Five of these were

From the Hull Zoological Laboratory, the University of Chicago. This investigation has been aided by a grant from the Rockefeller Foundation to the University of Chicago.

1. Burrows, Harold, and Kennaway, N. M.: *Am. J. Cancer* 20:48 (Jan.) 1934. Fussänger, R.: *Med. chem. Ztschr.* 2:194, 1934. Burrows, Harold: *Am. J. Cancer* 23:490 (March) 1935. Deanesly, R., and Parkes, A. S.: *Proc. Roy. Soc. London, s. B.* 124:279 (Dec. 7) 1937.
2. Drs. Gregory Stragnell, E. Schwenk and Max Gilbert of Schering Corporation provided ointments containing these androgenic substances.
3. Moore, C. R., and Gallagher, T. F.: *Am. J. Anat.* 45:39 (Jan.) 1930.

treated directly, two were treated indirectly and one remained an untreated castrate control. These ten animals, cited in table 1, illustrate several points. The animals were confined in three cages: one cage contained two normal and one castrate control; the second cage contained five castrates, four of which were anointed daily, while the fifth received treatment only from contact with treated cage mates; the third cage contained two unshaven castrates, only one being treated with ointment. Castrates were treated on the day of orchidectomy and for nineteen consecutive days. All animals were killed on the twentieth day of the experiment.

Attention to table 1 reveals that castrated animal 3, compared with normal controls 1 and 2, had experienced marked regression in the fresh weight of accessory reproductive glands within the twenty days of castration. Castrate 8, though receiving no direct application of the hormone, was caged with four castrates subjected to daily treatment with the ointment containing testosterone. The tendency for rats to sleep in compact groups provides contact with treated cage mates and

TABLE 1.—Effects of Free Testosterone Applied Daily as an Ointment to Castrated Male Rats for Twenty Days

Num- ber	Status	Daily Applica- tions	Total Amount	Loca- tion	Body Weight, Gm.	Prost- ate, Mg.	Ven- tral Semi- nal Vesic- les, Mg.	Com- ment
1	Normal control..		No treatment		290	506	668	Cage A
2	Normal control..		No treatment		220	344	999	
3	Castrate control		No treatment		200	76	116	
4	Castrate.....	1	0.6 mg.	Neck	200	347	923	Cage B
5	Castrate.....	2	1.2 mg.	Neck	200	425	1,267	
6	Castrate.....	1	0.6 mg.	Belly	200	232	792	
7	Castrate.....	2	1.2 mg.	Belly	215	396	1,631	
8	Castrate.....		No treatment		210	269	316	
9	Castrate.....	2	1.2 mg.	Neck	240	463	1,133	Cage C*
10	Castrate.....		No treatment		220	153	212	

* Not shaved.

hence an indirect exposure to the hormone. Castrated animals 9 and 10 were not shaved and only the former one was treated; animal 10, therefore, was exposed to the hormone only through contact with its single cage mate, which received daily treatments always on the same area of hair.

Examination of the data in table 1 demonstrates clearly the following facts: 1. Single daily application of the hormone-containing cream carrying 0.6 mg. of testosterone maintains weights of accessory reproductive organs equivalent to those of untreated normal controls. Cutaneous absorption appears about equally good on the neck or belly. 2. Two daily applications (total 1.2 mg.) causes the seminal vesicles to be of the order of 50 per cent greater than those of the normal controls. 3. Bare skin is not essential for absorption of hormone, since daily application to the same area of hair is only slightly less effective than on bare skin (compare animal 9 with animal 5 or 7). 4. Each untreated castrated male associated with treated cage mates possessed seminal vesicles 100 per cent greater than castrates associated with untreated males only. Absorption from contact has occurred in five repetitions of these experimental conditions and, in some cases not cited, seminal vesicles were only slightly less developed than in cage mates treated directly.

3. Treatment of castrated male rats during the most rapid period of growth of the accessory reproductive organs readily maintains a normal rate of growth of

these structures in castrate males with either the free hormone or the propionate, or it causes a much greater growth than in control litter mates. Thus, castrated males treated once a day from day 30 to day 50 with 0.6 mg. of free hormone possessed seminal vesicles weighing more than five times those of normal litter-mate controls. Castrates treated twice a day with testosterone propionate (total daily 1.2 mg.) from day 50 to day 70 possessed seminal vesicles considerably heavier than those of normal control litter mates.

4. Inquiry has been made with regard to the relative effectiveness of the free hormone and the propionate when applied as a cutaneous ointment in two groups of males: In group A, consisting of eight males 5 months of age, comparison was made of the accessory reproductive organs of two normal controls, two untreated castrates, two castrates receiving ointment containing free hormone twice a day (daily total 1.2 mg.) and two castrates receiving a like amount of propionate-containing ointment. The experiment was terminated on the twentieth day. Seminal vesicles of each hormone-treated male were slightly larger than those from normal controls and ten times the weight of those from untreated castrates; those from animals treated with the free hormone averaged 50 per cent greater than those from castrates treated with the propionate.

Group B, consisting of ten young males from 3½ to 4 months of age, were all castrated. Five were given eighteen single daily treatments on the neck with ointment carrying 0.6 mg. of free testosterone, beginning the day following castration. The second five were similarly treated with ointment carrying 0.6 mg. (daily) of testosterone propionate. All were killed on the day following the last treatment and the fresh weights of accessory reproductive organs were determined by means of a torsion balance after dissection under a binocular microscope. The average weight of the seminal vesicles of the five testosterone-treated males was 584 mg., while the average of four treated with propionate was 220 mg. Owing to slight loss of seminal vesicle secretion during dissection from one male treated with propionate, this animal was excluded from the average weights. This average figure expresses a real difference in effectiveness, since all males on free hormone possessed seminal vesicles that were heavier by 100 mg. than any male receiving the propionate treatments.

It is evident that when applied as an ointment the free hormone is more effective than the combined form.

5. The relative effectiveness of free testosterone, when given by subcutaneous injection in oil and when applied as an ointment on the skin, was investigated on but a single litter of animals; nevertheless the results were convincing. In a six male litter four animals were castrated on day 30; two castrates received daily subcutaneous injections of 0.6 mg. of testosterone in 0.2 cc. of sesame oil while the other two castrates received one daily application of ointment carrying 0.6 mg. of testosterone. The animals were killed on day 50. Seminal vesicles of normal litter mate controls weighed 67 mg., those receiving daily injections weighed 158 mg., while those receiving the same amount of free hormone by ointment weighed 398 mg. Thus cutaneous application of testosterone produced seminal vesicles weighing more than double those from treatment by injection and almost six times more than those from untreated normal litter mates.

6. Since testosterone or the propionate has been found highly injurious to the testes of young growing male rats when given by subcutaneous injections,⁴ it became of interest to investigate their possible effects when applied in an ointment.

A litter containing seven males was selected for treatment from day 22 to day 37 and killed on day 38. Three untreated controls occupied one cage while four others were caged together, three of which received treatment and the fourth only indirect treatment through contact with treated cage mates. Each treated male received two daily applications of testosterone propionate on the neck (total daily dose 1.2 mg.). On day 38 the average fresh weight of testes of the three ointment-treated males was 45 per cent below the weight of the untreated controls; the weight of testes of the untreated male associated with treated cage mates was 73 per cent below that of the normal control.

Thus, as with injected hormones, testes of young growing males are gravely injured when testosterone propionate is applied as a cutaneous ointment. The greater injury appearing in the indirectly treated male receives its explanation in the observations of Moore and Price⁴ that injury to the testis from injected testosterone propionate is inversely proportional and not parallel with dosage. That this animal actually received smaller amounts of hormone than the three cage mates treated directly is shown by the fact that its seminal vesicles were approximately one half the weight of those from males treated directly. Here also the smaller dosage produced the more severe testicular injury. Though these animals were at an age when sperm heads should have been present,⁵ and they were present in the testes of all untreated controls, the testes of the more severely affected male were entirely devoid of sperm heads and those least affected had materially fewer sperm heads than normal.

APPLICATION OF AN ESTROGEN

The effects of chronic cutaneous application of estrogen have already been noted by Burrows and Kennaway,¹ who employed a solution of estrone in benzene for periods up to several months. They determined that estrone was absorbed sufficiently to produce great enlargement and metaplasia of the prostate gland in mice.

Our experiences with application of estrogens as an ointment have been limited to observations made on the effects of a commercial face cream recommended for use by normal women to prevent or eradicate facial wrinkles. It is claimed that the preparation contains estradiol in a concentration of 0.625 mg. per ounce, that its effects are limited to the skin and that it produces no effect on internal structures of the body. It is recommended that one-half spoonful a day should be utilized for rubbing on the face, neck, hands and arms. This amount would carry approximately 40 micrograms for each daily application. Proper results are said to be obtained only by rigorous adherence to daily application and that results should be noticeable within about thirty days.

Since penetration through the skin occurs so readily in the case of testosterone and testosterone propionate, being even more effective for the uncombined hormone than similar amounts introduced in subcutaneous injection, it is of interest to inquire whether estradiol has an effect on the skin and yet exerts no effect on internal organs.

The face cream was purchased in the open market. It was applied in doses (weighed amounts of cream) such that if the labels are correct we used in our experiments one-fifth the recommended daily dose for women, which carried approximately 8.2 micrograms of estradiol.

1. A single daily application for two days to a 3 square inch area of shaved skin on the neck of spayed female rats induced cornified estrous smears within forty-eight hours. Two or three applications failed to hasten the reaction.

2. Normal male guinea pigs from 3 to 4 months old received respectively one, two and three daily applications of the cream on the neck during a period of three weeks. Measurements of the nipple of the mammary gland during the course of the experiment revealed that the nipples of animals receiving treatment once a day doubled their height by the second week; two or three daily treatments caused an increase in the height of mammary nipples of from three to five times in the course of three weeks of treatment. The nipples became

TABLE 2.—Effect of One Daily Application of Face Cream Containing Estradiol on Uterine Weight in Spayed Rats

	Body Weight, Gm.	Uterine Weight, Mg.
A. Treatment, once daily, days 29-59		
Normal control.....	92	395 (fluid)
Normal control.....	92	200
Spayed, treated.....	92	213
Spayed, treated.....	100	238
Spayed, no treatments.....	84	19
B. Young virgin adults, 19 daily treatments		
Normal control.....	169	218
Normal control.....	150	318
Normal control.....	142	211
Normal control.....	160	240
Normal control.....	150	203
Spayed, treated.....	132	332
Spayed, treated.....	132	390
Spayed, treated.....	156	328
Spayed, treated.....	158	366
Spayed, treated.....	163	356
Spayed, no treatment.....	156	68

turgid and the areolas prominent, and the external portion of the apparatus exceeded that of normal females of similar age.

3. Female rats were subjected to ovariectomy on day 39 and face cream was applied once a day on the neck until day 59, when the animals were killed and their uterine weights compared with normal litter mate controls and with untreated spayed females. In table 2 A the average uterine weight from two litter mate controls was approximately 200 mg. (the heavier fluid-filled proestrus uterus is naturally temporarily heavier because of fluid), that from spayed treated animals 225 mg. and the spayed untreated uterus 19 mg. The vaginal smear of each spayed treated female was heavily cornified.

Uterine response for older females following ovarian removal and treatment with face cream is illustrated in table 2 B; single daily applications on the neck were given for nineteen days with death on the day following the last application. One sees that the weight of the uterus of each of five spayed treated females is greater than the heaviest uterus among the five control females; average uterine weight for the five spayed treated females is 48 per cent greater than the average of five normal control uteri.

Such treatment of spayed females, therefore, more than substitutes for the loss of the ovaries.

4. Moore, C. R., and Price, Dorothy: *Anat. Rec.* 71: 59 (May) 1938.
5. Moore, C. R.: *Am. J. Anat.* 59: 63 (May) 1936.

4. It was of interest to examine the effect of the face cream on normal male rats. The estrogenic substance from extracts of human placentas and human pregnancy urine has been found to be highly injurious to the testicles when administered by subcutaneous injection.⁶

In a litter containing five males, three were treated once a day with one-fifth the recommended daily dose from day 37 to day 56 and killed on day 57. The average weight of the testes of two untreated controls was 2.179 Gm., that of three males treated with face cream 0.4127 Gm., or a reduction in the weight of the testes in treated males of 81 per cent as compared with normal litter mate controls. The weight of seminal vesicles in normal controls was 179 mg. as against 16 mg. for treated males, or a reduction of 90 per cent.

COMMENT

The results of experiments here cited are important for the demonstration of the ease with which sex hormones are absorbed through the skin rather than for presenting hitherto unknown effects of the hormones themselves. Many methods of administration of hormones have been studied in an attempt to reduplicate the activity of the intact sex glands as regards both the proper substances to be employed and the proper release of the substances in the body. Subcutaneous injections in oil have served more frequently as methods of application, but oral administration, nasal sprays, vaginal suppositories, cutaneous application and subcutaneous implantation of crystalline pellets have been used by various workers.

Deanesly and Parkes¹ have investigated various methods of application and consider that the subcutaneous implantation of pellets of crystalline material is perhaps the most efficacious means. By such procedures it is believed that absorption in body fluids is both slow and continuous and that the high and low concentrations arising from daily subcutaneous injections are avoided. It is likewise recognized that the absorption rate of hormones varies with the rise of different concentrations and different oils.

The results presented here call especial attention to the ease with which hormones may be applied as ordinary ointments as well as the readiness with which the substances are passed into the body and produce such effects as are known to follow subcutaneous injections in oil. It is evident from the experiment that ordinary testosterone is more effective than the propionate when the substances are applied as ointments on the skin. Similarly there is good evidence of greater effectiveness of testosterone when applied to the skin as an ointment than when injected subcutaneously in small quantities of sesame oil. It is presumed that these phenomena reveal a more gradual and continuous absorption through the skin than occurs when administration is by subcutaneous injections, and it is also apparent that the recognized effective superiority of propionate over the free hormone, in evidence from subcutaneous administration, is reversed when application is by means of ointment.

The ease with which cutaneous ointments containing hormone are applied and the tremendous influence that these substances have when taken into the body more or less continuously present the possible menace that would apply to any powerful drug that is easily procured and administered. It raises decidedly the question of the

propriety of including such substances in face creams for use by normal women on the presumption that it is beneficial in removing or warding off wrinkles and that all effects are limited to the skin. When one-fifth the recommended daily dose applied on a relatively very small area of skin causes in normal male guinea pigs a doubling or tripling of the height of the mammary nipple within a period of from two to three weeks, when it maintains the functional state of the uterus in ovariectomized female rats, when it brings on vaginal cornification or when it exerts profound injury on the testicles of normal male rats, it would certainly appear to be demonstrated that the effectiveness of the substance in question extends beyond the surface of the skin.

The fundamental question for consideration, and one that would appear to merit closest attention, is the influence that such administrations may have on the internal regulatory mechanism of the normal female reproductive functions. Much has already been written on ideas concerning the controlling mechanisms of reproductive cycles. Whereas the ovarian hormones play a fundamental characteristic role, this does not imply a more or less continuous liberation of hormone in the body but rather a series of periodic changes characterized by high and low concentrations. The sex glands are under an extraneous control believed to be largely centered in pituitary activity, and this in turn appears to be closely regulated by concentrations of gonad hormones. It is well known that administrations of estrogens to experimental animals disturb the normal controlling mechanisms, and in the animals here cited small amounts of the alleged wrinkle-removing face cream certainly maintain the animal in continuous vaginal estrus.

When hormone therapy is indicated, administration as skin ointments may prove to be the method of choice.

SUMMARY AND CONCLUSIONS

1. Testosterone or testosterone propionate applied on the skin as an ointment is readily absorbed and either maintains the accessory reproductive organs of castrate males in a normal reproductive state or stimulates their development precociously in the young or decidedly above the normal levels in adults.

2. These androgens, so administered, exert effects similar to those obtained following subcutaneous injections. They (a) maintain reproductive accessories in castrate males at all ages, (b) reconstitute castrated guinea pigs within seven days of treatment to a state of producing coagulable ejaculates on electrical stimulation of the head and (c) produce injuries to testes of normal growing young male rats.

3. Face cream (stated to contain estradiol) sold commercially and recommended for the removal of wrinkles from normal women has decided internal effects when applied daily on the skin of experimental animals. Such treatments (a) stimulate mammary development on normal male guinea pigs, (b) induce cornified vaginal estrous smears in spayed female rats, (c) maintain or increase normal growth of the uterus in young or mature spayed rats and (d) reduce the weight of testes by 80 per cent and the weight of seminal vesicles by 90 per cent in young male rats in comparison with normal litter mates.

4. These results both emphasize the efficiency of applying hormones in a skin ointment and at the same time suggest caution in the use by normal persons of articles containing these active principles.

6. Moore, C. R., and Price, Dorothy: *Am. J. Anat.* 50: 13 (March) 1932.

FOLLOW-UP STUDIES OF THE 1933 ST. LOUIS EPIDEMIC OF ENCEPHALITIS

J. F. BREDECK, M.D.

G. O. BROWN, M.D.

T. C. HEMPELMANN, M.D.

J. F. McFADDEN, M.D.

AND

H. I. SPECTOR, M.D.

ST. LOUIS

Within a few weeks after the nature of the encephalitis in the St. Louis epidemic was determined, the importance of a detailed study of the sequelae occurring in patients who had recovered was realized and plans were laid by the Metropolitan Health Council of Greater St. Louis for a follow-up study on each patient.

TABLE 1.—Summary of Cases Occurring in the City

Cases reported	585
Deaths reported	130
Mistaken diagnosis	455
Not found or no complete report submitted.....	15
Follow-up reports received.....	440
	63
	375

TABLE 2.—Results of Second Follow-Up Study, 1934-1935

Total number of reported cases, from the city and county, for the period of Aug. to Dec. 31, 1933.....	1,095
Deaths in same period.....	201
Letters sent to patients requesting reexamination.....	674
Letters returned for various reasons.....	144
Dead	4
Failed to cooperate.....	365
Total number reexamined for second time.....	543
	331

TABLE 3.—Analysis of Symptoms

	Yes	No
1. Headache.....	135	196
2. Sleeplessness.....	65	266
3. Drowsiness.....	71	260
4. Nervousness.....	164	167
5. Depressed feeling.....	70	261
6. Weakness.....	96	235
7. Fatigability.....	124	207
8.....	88	243
9.....	85	246
10.....	99	232
11. Inability to concentrate.....	50	272
12. Forgetfulness.....	91	240
13. General pain.....	78	255
14. Hearing difficulty.....	49	282
15. Speech disturbance.....	16	315
16. Double vision.....	47	284
17. Difficulty in smelling.....	16	315
18. Difference in taste of food.....	14	317
19. Difficulty in walking.....	70	261
20. Muscular tremors.....	32	299
21. Convulsions.....	1	330
22. Other complaints (not previously mentioned).....	52	279
23. Complaints before encephalitis (already mentioned).....	92	239

Accordingly, the first study of cases occurring in the city was started early in December 1933 by the St. Louis Health Division and completed the first of March 1934. Notifications were sent to the surviving patients

From the St. Louis Health Division, J. F. Bredeck, M.D., health commissioner, Dr. David Barr, Dr. Paul Zentay, Dr. John Eschenbrenner and the members of the Metropolitan Health Council of Greater St. Louis assisted the Special Committee in planning the follow-up studies.

who had been in the local hospitals requesting each patient to be present for a follow-up clinic on a specified day when all interested physicians could attend.

The follow-up of physicians' private patients was carried on through the attending physicians, who were sent a questionnaire for each case reported.

Table 1 is a summary of the cases occurring in the city reported at the time the follow-up was started.

After analysis of the 375 reports received it was obvious that this first follow-up study was not at all satisfactory, since some of the reports were not clear

TABLE 4.—Complaints According to Age Groups

Ages	Subjective Complaints Only	Subjective Complaints and Possible Organic Residues	No Complaints	Total
Under 1 year.....	0	0	0	0
1 to 4 years.....	2	1	3	6
5 to 9 years.....	9	3	12	24
10 to 14 years.....	5	2	15	22
15 to 19 years.....	10	1	10	21
20 to 24 years.....	12	4	5	21
25 to 29 years.....	10	3	10	23
30 to 39 years.....	19	2	14	35
40 to 49 years.....	30	4	23	57
50 to 59 years.....	32	8	21	61
60 to 69 years.....	22	3	22	47
70 years and over.....	9	0	5	14
Total.....	160	31	140	331

TABLE 5.—Occupational and Other Incidental Facts of Interest

	Yes	No	Died	Total
1. Did you feel perfectly well before attack of encephalitis?	237	92	2	331
2. Was your illness Mild	100	..	...	331
Severe	228			
Not stated	3			
3. Has health been same, better or worse since attack of encephalitis? Same	141	..	...	331
Better	79			
Worse	111			
4. Are you now working?.....	202	127	2	331
5. Have you returned to previous occupation?..	220	79	2	331
6. If not returned to previous occupation—Why? Physically unable				22
Going to school or of preschool age.....(preschool)				7
Not employed before illness.....				32
Unable to find work.....				5
Retired				
Changed type of work.....				7
No answer				4
Died				2
Total				79
7. If not working—Why? Physically unable				21
Going to school or of preschool age.....				61
Not employed before illness.....				
Unable to find work.....				37
Retired				3
Changed type of work.....				
No answer				3
Died				2
Total				127
8. Ages of those "physically unable" to work: 20 to 24 years.....4 cases		50 to 59 years.....6 cases		
30 to 39 years.....3 cases		60 to 69 years.....3 cases		
40 to 49 years.....2 cases		70 years and over.....3 cases		

as to whether the symptoms of the patient were really after-effects of the encephalitis or whether they had been present in the same degree before the illness; in some instances it was evident that symptoms during the acute stage of the disease were included in the report, and in other instances it was not entirely clear as to whether the symptoms noted were observed during the acute stage or at the time of the follow-up examination.

It was then decided by the committee of the Metropolitan Health Council to make a second follow-up study on all the surviving patients, city and county.

A questionnaire was prepared, simply worded to avoid misinterpretation of the questions, and sent to 874 supposedly surviving patients in the city and county.

The results of the second follow-up study, which was carried on during the fall of 1934 and the spring of 1935, are given in table 2.

TABLE 6.—Results of Third Follow-Up of Thirty-One Selected Cases of Encephalitis According to Age Groups (1936)

Subjective Complaints and Definite Organic Residues Found		Only Subjective Complaints Found	
Ages	No.	Ages	No.
Under 1 year.....	0	Under 1 year.....	0
1 to 4 years.....	1	1 to 4 years.....	0
5 to 9 years.....	1	5 to 9 years.....	1
10 to 14 years.....	0	10 to 14 years.....	1
15 to 19 years.....	0	15 to 19 years.....	0
20 to 24 years.....	4	20 to 24 years.....	1
25 to 29 years.....	2	25 to 29 years.....	1
30 to 39 years.....	3	30 to 39 years.....	0
40 to 49 years.....	1	40 to 49 years.....	0
50 to 59 years.....	5	50 to 59 years.....	3
60 to 69 years.....	1	60 to 69 years.....	2
	18		9
No Complaints			
Ages	No.		
30 to 39 years.....	1		
60 to 70 years.....	2		
Dead.....	1		

After an analysis had been completed of the results of the second follow-up study, it became obvious to the committee that it would be necessary to undertake a third follow-up study primarily for the purpose of making a reexamination, at some future date, of those

reported their health improved. Therefore, a total of 66 per cent felt that they had experienced no impairment of health as a result of the disease. Only twenty-two patients, or 6 $\frac{2}{3}$ per cent, felt that they were physically unable to resume their previous occupation. An analysis of these cases showed that six of these patients were above 60 years of age, and the infirmities of age of these patients may have been as important as the residuals of encephalitis in rendering them physically unable to work.

TABLE 7.—Nature of Organic Defects Found in the Eighteen Cases

Deafness.....	2
Speech defect.....	6
Visual disturbances.....	6
Positive Oppenheim and Babinski signs.....	1
Difficulty in walking.....	6
Change in acuity of smell.....	1
Lateral nystagmus.....	1
Positive Romberg sign.....	3
Paralysis of both lower extremities.....	1
Partial paralysis of upper extremities.....	1
Right hemiplegia.....	1
Epileptiform convulsions.....	1

TABLE 8.—Outstanding General Symptoms in Group with Organic Defects

Impaired memory	Dizziness
Nervousness	Inability to walk firmly
Irritability	Inability to work
Weakness	Sleeplessness

Only thirty-two patients complained of muscular tremors; i. e., 11 per cent of all patients reexamined. None of these showed definite evidence of parkinsonism.

TABLE 9.—Summary of Comparative Figures from Studies of Various Observers

	Total Cases Studied	Percentage of Mortality Acute and Chronic Stages	Number of Surviving Cases Studied	Percentage of Survivors Recovered: Health as Good or Better than Before Attack	Percentage of Survivors with Sequels or Complaints Not Preventing Work	Percentage of Survivors Physically Unable to Work	Percentage of Survivors Developing Parkinsonism
Parsons, ¹ England, Scotland, Ireland.....	3,112	22.9	2,110	35.2	27.4	31.3	25.0
Ashie Main, ² Glasgow.....	65	27.7	47	17.0	63.9	19.1	19.1
Reys, ³ Italy.....	100	10.0	144	10.0	20.0	70.0	40.0
von Stern, ⁴ Goettingen.....	4,919	25.0	...	...	...	...	...
Howe, ⁵ Baltimore (children).....	?	40.0	?	24.3	43.3	33.3	58.4
Ziegler, ⁶ Mayo Clinic.....	107	5.6	101	12.8	23.8	53.4	20.1
Kaneko and Aoki, ⁷ Japan (type A).....	66	18.2	54	51.5	21.7	22.1	77.0
Kaneko, ¹⁰ Japan (type B).....	752	12.2	633	1.5	47.2	67.5	...
	102	24.5	...	...	Per cent of all survivors with residuals of any type 3.11	...	Seldom observed
	6,243	55.6	2,000	95.9	51.9*	6.6	11.0†
Present study, St. Louis epidemic.....	1,100	18.7	331	65.0	42	...	...

* Some of these complaints existed prior to attack of encephalitis.

† Eleven per cent of all patients had some type of muscular tremor. No advanced parkinsonism was seen.

patients who presented not only residual symptoms but also organic residues. There were thirty-one such patients.

The health commissioner, therefore, appointed a special committee for this purpose, consisting of an internist, a pediatrician, a neurologist and the assistant health commissioner, and plans were made for a third reexamination of these thirty-one patients. The results of the third follow-up study are shown in table 6.

The important facts to be noted in the figures given in the various tables are the following: The mortality, including deaths since the epidemic subsided, was 18.7 per cent. Of 331 patients reexamined, 141 felt as well as before the attack of encephalitis and seventy-nine

ism. The organic residuals found on physical examination were limited to eighteen patients, or only 5.7 per cent of all patients examined.

COMMENT

These observations may be contrasted with those previously reported for cases of the winter type of encephalitis. A brief summary of comparative figures from the reported studies of Parsons,¹ Main,² Reys,³ the Italian Public Health Reports,⁴ von Economo,⁵

1. Parsons, A. C.: *Proc. Roy. Soc. Med.* 21: 1307-1318 (June) 1928.
2. Main, Ashie: *J. Hyg.* 31: 162-183 (April) 1931.
3. Reys, L.: *L'encephalite epidemique*, Paris, 1922.
4. Italian Public Health Reports, quoted by Stern.⁶
5. von Economo, Constantin: *Die Encephalitis lethargica*, Berlin, Urban & Schwarzenberg, 1922.

Stern,⁶ Howe,⁷ Ziegler⁸ and Kaneko and Aoki⁹ are given in table 9. The statistics of Kaneko¹⁰ for the type B encephalitis are also included.

While the mortality varies widely in the series reported, it would appear that the mortality reported by the European observers for the winter type of the disease, with the exception of the reports of Reys and Stern, is higher than that of any of the American observers. The study reported by Howe concerned children living near Baltimore. The figures given by Ziegler relate to patients who came to the Mayo Clinic largely for the residuals of the chronic stage of the disease. Hence the mortality of the acute stage is largely eliminated. The mortality of the summer-type of encephalitis in Japan is higher than that of the St. Louis summer epidemic.

The percentage of complete recovery of health is apparently much higher in the summer type of the disease than in the winter type. Two thirds of all patients studied in the St. Louis outbreak reported restoration of health. In Japan the percentage of residuals found was very low—much lower in fact than we have found in the present series. Of the figures on the winter type of the disease, the most favorable are those of Howe, who found that 51.8 per cent of the children surviving the disease recovered. The very low figure for recovery in the series of Ziegler is due to the fact already noted that he was dealing largely with patients in the chronic stage showing marked residuals and not a group of patients studied from the time of the acute attack. Forty-two per cent of our patients reported not only no complaints attributable to encephalitis but no complaints at all.

One of the most encouraging features of the present study is the very small percentage of total disability found; namely, 6⅓. This is in striking contrast with all studies of the winter type of encephalitis, in which the total disability varies from 19.1 to 70 per cent. This difference is apparently due in a large part to the fact that so far severe parkinsonism has not been noted as a residual. It is true that 11 per cent of our patients complain of muscular tremors, but in most instances these are slight and not disabling. While it is still too early to say that parkinsonism will not develop, the situation at the present time is most encouraging in this respect. While no accurate figures are available, the winter type of encephalitis, when occurring in the vicinity of St. Louis, has a high percentage of residuals of parkinsonism. This would appear to be an important difference in the two types of encephalitis.

It is noteworthy that the organic residuals actually observed on physical examination were present in but 5.7 per cent of all cases and were often not of great severity.

On the other hand, subjective nervous complaints of slight or moderate severity are fairly frequent residuals. In the cases included in the present study, nervous excitability was reported in 42 per cent, irritability was a complaint in 45 per cent, loss of memory was also a common residual, being reported in 38 per cent of all cases, and drowsiness occurred in 27 per cent. Some of these complaints were present prior to the attack of

encephalitis. Subjective nervous complaints, nevertheless, would appear to be by far the most common residuals of the St. Louis type of encephalitis. They are of sufficient severity to cause complete or serious incapacity in but few instances.

The most important disturbance of the motor nervous mechanism noted was difficulty in walking. This was reported in about 25 per cent of all cases. It was described as an unsteadiness of gait or as difficulty in walking in a straight line. This complaint was seldom of sufficient severity to incapacitate the patient.

SUMMARY

A restudy of patients in St. Louis and St. Louis County who suffered an attack of encephalitis in the summer of 1933 shows complete recovery of 66 per cent of all the patients, but only 6.3 per cent are physically unable to resume their previous occupations. Severe parkinsonism so far is quite uncommon as a residual. Mild subjective nervous complaints are the most common residuals, particularly headaches, nervous irritability, loss of memory and drowsiness.

Municipal Courts Building.

MENINGO-ENCEPHALITIS IN MUMPS

HERMAN FINKELSTEIN, M.D.

WEST ORANGE, N. J.

It is fairly well known that meningo-encephalitis may occur during the course of mumps, but its frequency has never been ascertained. It is my purpose in this paper to show that meningo-encephalitis occurs quite frequently in mumps, though usually with such mild symptoms that unless one resorts to spinal punctures at the slightest indication the diagnosis will not be made in many cases.

During the period of two and a half months in October, November and December 1937, routine spinal punctures were done on practically all patients with mumps admitted to the Willard Parker Hospital with the exception of adult patients and patients with mumps that occurred simultaneously with some other disease. About forty patients had spinal punctures done as soon after admission as was feasible. A complete physical and neurologic examination preceded the spinal puncture. All spinal fluids were examined in Dr. Josephine B. Neal's laboratory of the health department and in the laboratory of the Willard Parker Hospital. Sixteen of these cases in which abnormal spinal fluids were found are being reported. They were divided into three groups, depending on the severity of the symptoms: group A, severe; group B, mild; group C, symptom free.

GROUP A

The four patients in group A, at some time during the first week of their illness, had severe clinical signs and symptoms of involvement of the central nervous system. These patients presented extreme drowsiness, severe headache, malaise, fever and vomiting. They sometimes presented abnormal neurologic signs, such as a positive Kernig, a positive Brudzinski and nuchal rigidity. The symptoms persisted for several days, the lethargy lasting from three days to a week. Headache persisted for from four to five days in each of the four cases. Sedatives were resorted to, since spinal punctures did not relieve the patients of their headaches.

From the Mumps Service of the Willard Parker Hospital of New York.

6. Stern, Felix: Die epidemische Encephalitis, Berlin, Julius Springer, 1922.

7. Howe, H. A.: Bull. Johns Hopkins Hosp. 17:123-156 (Sept.) 1930.

8. Ziegler, L. H.: Follow-up Studies on Persons Who Have Had Epidemic Encephalitis, J. A. M. A. 91:138-141 (July 21) 1928.

9. Kaneko, R., and Aoki, Y.: Ergebn. d. inn. Med. u. Kinderh. 3:4: 342, 1928.

10. Kaneko, R.: Japan M. World. 3: 237-241 (Sept.) 1925.

Patient 3, while convalescing, suddenly had a psychosis and was transferred to Bellevue Hospital for observation, where the diagnosis toxic psychosis was made because the patient was confused for a few days, but it cleared up rapidly. The psychosis was attributed to the mumps.

GROUP B

The six patients in group B had mild symptoms, including slight headache, listlessness, anorexia and slight fever. These symptoms were so mild and of such short duration that, under ordinary circumstances, one would not consider the diagnosis of meningo-

Physical Examination, Course and Spinal Fluid Changes in Three Groups.

Case	Date of Onset of Mumps	Date of Spinal Tap	Physical Examination on Admission	Course	Spinal Fluid
GROUP A					
1	12/23	12/26	Boy, aged 9 years, temperature 103 with 3 day history of mumps, sore throat, fever; convulsions on admission; pupils widely dilated and did not react to light; abdominal reflexes absent	Semicomatosa and disoriented; temperature normal after 5 days; mentally normal 1 week after admission; reflexes normal; could not take food or fluid by mouth for 4 days; vomited when forced	Cells 60, 98% monocytes; culture negative; albumin 1 plus, globulin 1 plus, sugar 3 plus
2	12/26	12/29	Boy, aged 6 years, temperature 104; 3 day history of mumps; very drowsy; chills; could not be aroused on admission; neurologic examination negative	Temperature normal after 3 days; mentally clear after 3 days	Cells 240, monocytes predominating; culture negative; albumin 1 plus, globulin 1 plus, sugar 3 plus
3	12/13	12/20	Youth, aged 17, with 7 day history of fever, mumps and orchitis, temperature 103.2 on admission; acutely ill, markedly drowsy, difficult to arouse, headache, moderate nuchal rigidity, Kernig and Brudzinski negative	Temperature dropped to normal in 24 hours; drowsiness and headache lasted about 72 hours after admission; during third week of convalescence a psychosis developed; transferred to Bellevue Hospital for observation	Cells 60, monocytes predominating; culture negative; albumin 1 plus, globulin 1 plus, sugar 3 plus; fluid clear
4	12/15	12/17	Woman, aged 25; temperature 102 on admission with 2 day history of mumps; nausea, vomiting, abdominal pain; very drowsy; could not be aroused; neurologic examination negative	Temperature normal in 48 hours; headache severe and drowsiness lasted 4 to 5 days; showed psychic changes on fourth day after admission; lasted 2 to 3 hours	Fluid clear; cell count unsuccessful; monocytes increased in smear; culture negative; albumin 1 plus, globulin 1 plus, sugar 3 plus
GROUP B					
1	10/28	11/1	Boy, aged 3 years; temperature on admission 102; not ill; 1 day history of mumps; neurologic examination negative	Temperature normal 1 day after admission; 11/1 temperature rose to 101; became drowsy; neurologic examination negative; after 24 hours temperature normal, symptoms relieved	Fluid hazy (slight); cells 170, monocytes predominating; culture negative; albumin 1 plus, globulin 1 plus, sugar 3 plus
2	10/28	11/3	Boy, aged 9 years; temperature 101; not ill; 1 day history of mumps; neurologic examination negative	Temperature normal 11/2, then rose sharply to 104; had slight headache, slight drowsiness, vomited once; slight nuchal rigidity; slight Kernig and Brudzinski; temperature normal and signs and symptoms disappeared in 24 hours	Fluid clear; cells 140, monocytes predominating; culture negative; albumin 1 plus, globulin 1 plus, sugar 3 plus
3	11/21	11/23	Girl, aged 8 years; temperature 102; 3 day history of mumps; not ill on admission; neurologic examination negative	11/23, temperature normal in a. m., in p. m. temperature rose to 104; no complaints except slight drowsiness; neurologic examination negative; temperature normal 12/3	Fluid clear; cells 25; culture negative; albumin 1 plus, globulin 1 plus, sugar 3 plus
4	12/21	12/27	Boy, aged 4 years; temperature 99 on admission; 1 day history of mumps; not ill; neurologic examination negative	Temperature normal until 12/26 when it rose to 103; slight drowsiness, no other complaints; neurologic examination negative; temperature normal on 12/31	Fluid slightly hazy; cells 245, monocytes predominating; culture negative; albumin 1 plus, globulin 1 plus, sugar 3 plus
5	11/5 (a) 11/12 (b) 11/17		Boy, aged 7 years; temperature 99; 5 day history of mumps; not ill except for slight sore throat; neurologic examination negative	11/11, had slight headache and drowsiness, vomited twice; temperature normal 11/13, at which time patient was symptom free; neurologic examination negative	(a) Fluid hazy; 93% monocytes; cells 1,250; culture negative; albumin 1 plus, globulin 1 plus, sugar 3 plus (b) Fluid clear; cells 15, monocytes predominating; culture negative; albumin 1 plus, globulin 1 plus, sugar 3 plus
6	10/21	10/24	Girl, aged 5 years; temperature normal; not ill on admission; 1 day history of mumps; neurologic examination negative	10/23, temperature rose to 102; had slight headache, anorexia, listless; vomited once; temperature normal after 24 hours; symptoms disappeared after 24 hours	Fluid slightly hazy; cells 230; culture negative; albumin 1 plus, globulin 1 plus, sugar 3 plus
GROUP C					
1	11/24	11/29	Boy, aged 6 years; temperature normal; 2 day history of mumps; not ill; neurologic examination negative	No complaints	Fluid clear; cells 15, monocytes predominating; albumin 1 plus; globulin 1 plus, sugar 3 plus
2	12/10	12/11	Youth, aged 17 years; temperature normal; 1 day history of mumps; not ill; neurologic examination negative	No complaints; temperature normal	Fluid clear; cells 15, monocytes predominating; albumin 1 plus; globulin 1 plus, sugar 3 plus
3	12/20 (a) 12/22 (b) 12/28		Boy, aged 5 years; temperature 99; 1 day history of mumps; no complaints; neurologic examination negative	12/28 had rise in temperature to 105; no complaints; physical and neurologic examinations negative; temperature dropped to normal 12/29	(a) Fluid clear; cells 10, monocytes predominating; albumin 1 plus (slight), globulin 1 plus (slight), sugar 3 plus (b) Fluid clear; cells 70; monocytes predominating; albumin 1 plus, globulin 1 plus, sugar 3 plus
4	11/7	11/13	Boy, aged 5 years; temperature 102; 1 day history of mumps; not ill; no complaints; neurologic examination negative	Temperature dropped to 99 11/9, 11/13 rose to 101; no complaints at any time; physical and neurologic examinations negative	Fluid clear; cells 850, 97% monocytes; albumin 1 plus, globulin 1 plus, sugar 3 plus
5	11/29	12/4	Boy, aged 6 years; temperature on admission 101; 1 day history of mumps; not ill; no complaints; neurologic examination negative	Temperature dropped to normal 12/1 and remained normal; no complaints	Fluid clear; cells 25, monocytes predominating; culture negative; albumin 1 plus, globulin 1 plus, sugar 3 plus
6	11/8	11/15	Boy, aged 7 years; temperature on admission 101; no complaints; neurologic examination negative	During first 5 days temperature varied from 99 to 100 and then remained normal; had a mild sore throat 11/13	Fluid clear; cells 300, monocytes predominating; culture negative; albumin 1 plus, globulin 1 plus, sugar 3 plus

Normal spinal fluid: Fluid, clear; cells, 0 to 10; smear, negative; culture, negative; albumin, plus-minus (\pm); globulin, plus minus (\pm); sugar, 0 plus.

encephalitis nor would one resort to a lumbar puncture for diagnosis. The symptoms did not last for more than a few hours and were not severe enough to require sedation.

GROUP C

The six cases in group C did not present any sign or symptom clinically which would even suggest the possibility of meningo-encephalitis. They were all symptom free although, in some of the cases, there occurred a slight rise in temperature for from twelve to twenty-four hours.

Examination of the spinal fluid in all these sixteen cases showed an increase in the cell count. The fluids with the higher cell counts were hazy in appearance. The cell counts did not vary with the severity of the disease, since high cell counts were found in some of the milder cases. As a matter of fact, the highest cell count (1,250 cells) occurred in one of the mild cases (group B). All smears showed an increase in cells with a great preponderance of mononuclear cells. The proteins were increased qualitatively in all spinal fluids. Sugar was normal. Spinal fluid cultures were negative. Blood counts, done in all cases, did not show any unusual features. Urinalysis was normal in nearly all cases.

The detailed data of the individual cases are presented in summary in the accompanying tabulation.

COMMENT

There are several phases of the neurologic aspect of mumps which deserve comment. In the first place, the question naturally arises as to the etiology of meningo-encephalitis in mumps. The spinal fluid in these cases was sterile with the ordinary culture methods and when injected into laboratory animals produced no untoward effects. It is generally conceded that the involvement of the central nervous system in mumps is caused by a virus. The mere fact that the virus is not found in the spinal fluid does not negate this conception because in other virus diseases of the central nervous system, such as poliomyelitis and rabies, the virus usually cannot be demonstrated in the spinal fluid, although it is present in the substance of the brain and spinal cord.

Dr. Josephine Neal believes¹ that the mumps virus itself is the cause of the meningo-encephalitis, since the virus of mumps has a tendency to invade tissues other than the parotid gland, and also because the symptoms are less varied than in other forms of encephalitis. However, one may conjecture whether it may not be due to some other virus infection superimposed on a parotitis.

There are two factors to be considered in the apparent increase in involvement of the central nervous system in mumps. First, the diagnosis can undoubtedly be made more often, particularly in mild or symptom-free cases of mumps, by resorting to lumbar punctures more frequently. In addition, Dr. Neal has often stated in her discussions on this subject that the incidence of virus infections of the central nervous system has definitely increased in recent years and that this holds true also for the involvement of the central nervous system in mumps.

As regards the status of the symptom-free group of cases, I suppose one may consider them as subclinical types of infection of the central nervous system. For there undoubtedly must have been some pathologic condition in the meninges or encephalon, or both, to produce the increase in cells and abnormal amounts of protein in the spinal fluids in these cases.

SUMMARY

1. It has been shown that the incidence of meningo-encephalitis in mumps is not as unusual as it was formerly thought to be.

2. Meningo-encephalitis in mumps may occur with very mild symptoms or with no symptoms whatever and, under these circumstances, it could not be diagnosed without a lumbar puncture.

291 Pleasant Valley Way.

JAUNDICE FROM BISMUTH COMPOUNDS
USED IN THE THERAPY
OF SYPHILIS

REPORT OF THIRTY-TWO CASES

RUBEN NOMLAND, M.D.

IOWA CITY

EDWARD A. SKOLNIK, M.D.

CHICAGO

AND

LAWRENCE L. McLELLAN, M.D.

PHILADELPHIA

Jaundice occurring during the treatment of syphilis has been the subject of a great deal of study. When medication has been thought to be the cause of the jaundice, the arsphenamines have been blamed in almost every instance. Relatively few authorities have suggested that bismuth compounds used in the treatment of syphilis could cause jaundice. Padgett and Moore¹ in their two recent reviews of syphilis did not mention bismuth jaundice. Stokes² in his textbook also omitted mention of bismuth jaundice. There are a few reports of jaundice occurring after treatment with bismuth compounds, but none go into any detail. In Ruge's³ review of more than 700 cases of jaundice in patients under treatment for syphilis he mentioned ten who acquired jaundice and had had only bismuth therapy. Langeron⁴ observed two cases of bismuth jaundice and cited fifteen reports of the condition made to him personally. He concluded that bismuth is not hepatotoxic, as is arsphenamine, but that it has a non-specific action on the liver previously damaged by syphilis, arsphenamine, alcohol or other agent.

Graffar⁵ in his series of 246 cases of jaundice observed seven persons who had received bismuth compounds alone and fourteen more to whom arsphenamine had last been given a year or more previously. He did not discuss the cases of bismuth jaundice. Soffer⁶ recently made an extensive study of arsphenamine jaundice. He had a series of 143 cases in which jaundice developed during treatment. Two of the patients had received only bismuth therapy. He also did not discuss the problem, although he considered the possibility that interval treatment with heavy metal was

From the department of dermatology and syphilology and of medicine, Rush Medical College, University of Chicago.

1. Padgett, Paul, and Moore, L. L.: A Review of the Recent Literature, *Arch. Int. Med.*, **60**: 887 (Nov.) 1937.

2. Stokes, J. H.: *Modern Clinical Syphilology*, ed. 2, Philadelphia, W. B. Saunders Company, 1936.

3. Ruge, Heinrich: Die Zusammenhänge zwischen Syphilis, Salvarsan, und der sog. katarrhischen Gelbsucht auf Grund von 2,500 in der Marine von 1919-1929 beobachteten Fällen, *Dermat. Wehnschr.* **94**: 278 (Feb. 29) 1932.

4. Langeron, L.; Paget, M., and Devriendt, C.: De l'ictère post-bismuthique, *Presse méd.* **40**: 1189 (July 30) 1932.

5. Graffar, Marcel: Contribution à l'étude des ictères survenant au cours du traitement arsenical, *Presse méd.* **40**: 661 (May 1) 1937.

6. Soffer, L. J.: Postarsphenamine Jaundice, *Am. J. Syph., Gonorr. & Ven. Dis.* **21**: 309 (May) 1937.

1. Personal communication to the author.

a factor in the cases of late jaundice, that is, those in which the condition occurred three months after the last injection of arsphenamine. About one third of his cases were of the late type. Wile and Sams⁷ did not consider bismuth as a cause of jaundice, although all their patients received interim treatment with heavy metal. Presumably this was a bismuth compound, and as almost two thirds of their cases were of the late type, there was probably an adjuvant action of bismuth in their cases of late jaundice.

It is not our intention to discuss the theories of the cause of jaundice occurring during or after treatment of syphilis, because that has been done adequately. It is virtually impossible to differentiate jaundice caused by antisypilitic therapy from so-called catarrhal jaundice, and bismuth jaundice cannot be differentiated from arsphenamine jaundice. The available evidence indicates that syphilis of the liver and the so-called hepatorelapse are unimportant factors in therapeutic jaundice.

In a large outpatient clinic over a period of five years, jaundice attributed to the treatment developed in seventy-five cases. Extensive study of the cases was not possible, but the criteria for diagnosis were lack of evidence of syphilis of the liver and of other disease of the liver or biliary system, development of the jaundice within a reasonable time after the last treatment and complete clinical recovery. For bismuth compounds the time chosen was six weeks and for arsphenamine twelve weeks.

The jaundice observed could be classified in the following categories:

1. Herxheimer's jaundice (hepatorelapse), with the jaundice occurring within one week after the beginning of treatment of early syphilis with arsphenamine, three.
2. Arsphenamine jaundice, eighteen.
3. Bismuth jaundice, thirty-two.
4. Arsphenamine or bismuth jaundice—jaundice developing while the patient was receiving bismuth but within twelve weeks after the last injection of neoarsphenamine, ten.
5. Unclassified but probably therapeutic jaundice, five.
6. Mapharsen jaundice, two.
7. Tryparsamide jaundice, one.
8. Jaundice from mercury, one.
9. Jaundice from sodium cacodylate, one.
10. Fatal jaundice, two.

Because jaundice from bismuth had been largely unrecognized, we felt that study of these cases was most important.

Our criteria for the diagnosis of bismuth jaundice were lack of previous treatment with arsphenamine, at least within the preceding three months; development of jaundice within six weeks after the last treatment with a bismuth compound; absence of other causes of jaundice, and complete clinical recovery.

The patients with bismuth jaundice numbered thirty-two and could be divided into two groups. The first group, numbering ten, had had no arsphenamine. The second group, numbering twenty-two, had had neoarsphenamine but none within twelve weeks before the onset of the jaundice.

In six of the ten patients who had had only bismuth, the jaundice developed within one week after the last treatment; in three it developed in from one to two weeks, and in one it developed in from two to three weeks.

Of these ten patients one had from one to ten injections of a bismuth compound, four from eleven to twenty injections, three from twenty-one to thirty injections, and two over thirty injections.

The diagnosis in three cases was cardiovascular syphilis and in one case syphilis of the central nervous system. In two cases it was cutaneous, nodular, ulcerative syphilis and in four cases latent syphilis. There were no cases of early syphilis because in these neoarsphenamine was given as a matter of routine.

In all cases the bismuth preparation was bismuth subsalicylate given in a dose of 1.5 or 2 cc. of the ten per cent suspension in oil at weekly intervals.

Age, sex, race and season of the year did not seem to have any bearing on the incidence of the jaundice.

Of the twenty-two patients who had had neoarsphenamine but whose jaundice was presumed to be caused by bismuth, seven had had their last neoarsphenamine from twelve to sixteen weeks before, three from sixteen to twenty-three weeks before, eleven from twenty-four to thirty weeks before and one over thirty weeks before. Because of the time which had elapsed since the last injection of neoarsphenamine, we felt that it had nothing to do with the jaundice.

Jaundice developed in four patients in the first week after the last treatment; in five, within one to two weeks; in three, within two to three weeks; in four, within three to four weeks, and in five, within four to six weeks.

The amount of bismuth given was from eleven to twenty injections in nine cases, from twenty-one to thirty injections in six and thirty-one or more injections in five.

The diagnosis was secondary syphilis in nine cases, latent syphilis in ten cases, cardiovascular syphilis in one case and neurosyphilis in one case.

In all except three the bismuth preparation used was 10 per cent suspension of bismuth subsalicylate in oil given in a dose of 1.5 cc. Three patients received considerable amounts of an aqueous bismuth compound; namely, bismuth potassium tartrate or bismuth sodium tartrate.

In this group there were a considerable number of patients with early syphilis in whom jaundice developed from three to seven months after their last injection of neoarsphenamine, while they were being treated with a bismuth compound. There was nothing significant in the age, sex, race or seasonal incidence of the jaundice.

The clinical picture in bismuth jaundice is in no way distinguishable from that of other forms of toxic jaundice, such as jaundice from neoarsphenamine, from mapharsen, from sodium cacodylate or from other drugs which may cause jaundice. Our experience is like that of others in that we found no way in which jaundice of this type can be differentiated from acute catarrhal jaundice with any degree of certainty except by the history of the giving of the causative drug.

The severity of jaundice from bismuth was variable, but most of the attacks were mild or moderately severe. Probably the best conception can be given by abstracts of typical case histories:

An example of mild jaundice occurred in a woman aged 34, who had late cutaneous syphilis. She noted yellowness of the eyes nine days after her last injection of bismuth subsalicylate. On physical examination nothing was found except mild yellowing of the conjunctivas and bile in the urine, which was dark. Two weeks later there was no evidence of jaundice, and treatment was resumed.

7. Wile, U. J., and Sams, W. M.: A Study of Jaundice in Syphilis: Its Relation to Therapy. *Am. J. M. Sc.* 157: 297 (March) 1934.

An example of moderate jaundice occurred in a man who had late latent syphilis treated only with bismuth compounds. He noted yellowness of his eyes about eighteen days after the last treatment and had mild tenderness in the right upper quadrant. Physical examination revealed icterus of the conjunctivas, and bile was found in the urine. The liver was palpable two fingerbreadths down and slightly tender. After three weeks the scleras and the urine were clear and the liver was not palpable. Treatment was resumed, including administration of a bismuth compound, without untoward incident.

An example of the more severe bismuth jaundice occurred in a man aged 51 with latent syphilis, in whom jaundice developed after his fifteenth injection of a bismuth compound. Sixteen days later he noted that his eyes were yellow and that his urine was dark. A few days later he had chilly sensations, was nauseated, belched and had moderately severe abdominal pain. These symptoms lasted only three or four days. When he was examined at this time, about nine days after the onset, his scleras were markedly icteric, his liver was tender and palpable three fingerbreadths below the costal margin. There was much bile in the urine, with albumin and casts. The stools were light in color but not clay colored. The jaundice remained deep for about thirty days and cleared within two weeks, enduring six weeks all told. The stools were light colored only a few days. When the patient was examined after recovery the liver could not be palpated, the urine was normal and there was no after-effect from the jaundice.

Of the ten persons with jaundice who had had only a bismuth compound, two had mild, five moderate and three severe jaundice. Of the twenty-two who had been given arsphenamine twelve or more weeks and a bismuth compound six weeks or less before jaundice developed, nine had mild, ten moderately severe and three severe jaundice.

The incidence of bismuth jaundice over a period of five years has been one attack for 2,242 injections of bismuth compounds. The incidence of jaundice from neoarsphenamine during the same period has been one attack for each 951 injections. We cannot give figures on the percentage of patients affected, but it cannot be much more than 1 per cent of the number who received adequate treatment for their syphilis. In spite of the fact that there were more cases of bismuth jaundice than of neoarsphenamine jaundice, the incidence per injection of neoarsphenamine was over twice as great.

To those who would question the validity of the diagnosis of bismuth jaundice one can say that the same reasoning is involved in diagnosing this type as in diagnosing other therapeutic jaundice. In general the criteria are recent treatment with the suspected drug, absence of any other cause of jaundice, and clinical recovery which, except in rare cases, is complete.

Forms of therapeutic jaundice cannot, in our opinion, be differentiated from each other except on the basis of the history of the drug used. They cannot be differentiated from so-called catarrhal jaundice. In fact, several authors, especially Ruge, maintain that therapeutic jaundice with syphilis is not primarily from the therapy but follows closely the incidence of simple infectious (catarrhal) jaundice.

SUMMARY AND CONCLUSIONS

Seventy-five cases in which jaundice occurred during therapy for syphilis were studied. In thirty-two the cause was thought to be a bismuth compound. In these thirty-two the jaundice began within six weeks after the last treatment. Ten of the patients had had only the bismuth compound. Twenty-two had had neoarsphenamine, but none within twelve weeks of the onset

of the jaundice; in fifteen cases more than fifteen weeks had elapsed since the last treatment with neoarsphenamine. All the patients with bismuth jaundice recovered, and most of them were subsequently given a bismuth compound without its causing harm. In six of the thirty-two the jaundice persisted for six weeks or more.

MESENTERIC VASCULAR OCCLUSION

LORIN D. WHITTAKER, M.D.

Fellow in Surgery, the Mayo Foundation
PEORIA, ILL.

AND

JOHN DEJ. PEMBERTON, M.D.

ROCHESTER, MINN.

Mesenteric vascular occlusion, one of the most fatal of all abdominal catastrophes, arises in a variety of ways and gives rise frequently to bizarre symptoms. This condition most often defies recognition and is treated by various surgical and nonsurgical methods, usually to no avail. Its occurrence is relatively rare and few cases are seen in any one surgical practice. However, in the study of a series of these cases, facts regarding origin and pathogenesis are obtained, predominant symptoms are recognized and types of treatment used may be evaluated, all of which may aid in recognition and management in the occasional case.

The study we are presenting is based on a consecutive series of sixty proved cases seen at the Mayo Clinic, in fifty-seven of which necropsy was performed; in the remaining three cases surgical procedures performed for the occlusion were survived. Cases in which the symptoms and clinical course were suggestive but were not proved by observations at the time of operation or by examination at necropsy were not included in this study.

ETIOLOGY

In this series of sixty patients there were thirty-five males and twenty-five females. The condition was seen most frequently when the patients were at that age in which complications of preexisting disease begin to be manifest, or evidence of degenerative processes begins to appear. The average age of the males was 45 years and the average age of the females was 43 years. The youngest patient was 13 years of age, and the oldest was 83. Mesenteric vascular occlusion in the young was seen more frequently following acute abdominal infections than in relation to any other condition.

There were thirty-six cases (60 per cent) in which mesenteric vascular occlusion was unrelated to any previous surgical procedure and, of this group, only sixteen (44.4 per cent) of the patients were subjected to abdominal exploration; the condition of the remaining twenty patients did not warrant surgical intervention. Of these twenty patients, sixteen were under observation at the clinic for chronic conditions, predominantly cardiac disease (ten cases). In the remaining four cases of the twenty the diagnosis of "acute abdomen" (two cases) and preeclamptic toxemia and cerebral embolus (one case each) had been made elsewhere. Of the sixteen patients subjected to operation several also were under observation at the clinic for various conditions, mostly cardiac disease, at the time the vascular accident occurred. The preoperative clinical diagnoses in these sixteen cases were respectively intestinal obstruction in seven cases, mesenteric thrombosis in

four, abdominal hemorrhage in two (both occurred in women during the second month of pregnancy) and ruptured appendix (present), strangulated hernia (present) and acute condition of the abdomen in one case each.

There were twenty-four cases (40 per cent) in which mesenteric vascular occlusion followed some operative procedure and, of this group, only three patients were subjected to reexploration. The surgical procedures originally carried out in the twenty-one cases in which reexploration was not made included splenectomy for

TABLE 1.—*Mesenteric Vascular Occlusion in the Sixty Cases*

Type of Occlusion and Vessels Occluded	Cases
Arterial occlusion.....	19
Superior mesenteric.....	18
Combined superior and inferior mesenteric.....	1
Venous occlusion.....	27
Superior mesenteric.....	25
Inferior mesenteric.....	1
Combined superior and inferior mesenteric.....	1
Combined arterial and venous occlusion.....	14

splenic anemia (seven cases), a biliary or pancreatic surgical procedure (four cases), appendectomy or drainage for acute gangrenous appendicitis (three cases), a gastroduodenal operation (three cases), operation on the transverse colon (two cases), herniorrhaphy (one case) and extraction of a cataract (one case). Reexploration was not made either because of the patient's immediately poor condition, or because it was felt that operation offered no hope for recovery. Of the three cases in which reexploration was carried out, in one the reexploration followed an operation on the biliary tract; a volvulus was released on the fifth postoperative day and recovery followed. Thrombosis of the vessels which supplied 2 feet (70 cm.) of ileum had occurred. In the second case, reexploration followed splenectomy for splenic anemia. Enterostomy was performed on the twenty-seventh postoperative day; the jejunum was found discolored. Venous thrombosis continued to the extent of completely blocking the superior mesenteric and portal veins; death occurred on the twenty-ninth postoperative day. In the third case reexploration followed hysterectomy. On the eighth postoperative day an internal hernia through the transverse mesocolon was reduced; the lower part of the ileum was discolored, and thrombosis of the superior mesenteric artery and vein progressed to the extent of complete involvement. Death occurred on the tenth postoperative day.

The mortality rate in this condition is stated to be from 85 to 100 per cent. As has been said concerning the series under consideration here, in thirty-six cases the occlusion was unrelated and in twenty-four cases it was related to a previous operation. Of the twenty-four patients, as also has been shown, three were operated on again in an attempt to treat the occlusion and one survived. Of the thirty-six patients, sixteen were operated on for the same reason and two survived. These three patients were the only ones in the entire group of sixty who survived. Therefore the mortality rate in this entire group was 95 per cent; the mortality rate of patients operated on for occlusion was 84.2 per cent, since sixteen of nineteen died. However, it is to be remembered that the series does not include the cases in which the diagnosis was not definitely proved, the cases in which the patient may have survived surgical operation and in which a definite diagnosis was not established, or those cases in which the patient may

have suffered mesenteric occlusion and have recovered without surgical intervention for the occlusion. The types of occlusion and the vessels occluded are given in table 1.

The incidence of involvement of the superior mesenteric artery as compared with that of the superior mesenteric vein compares closely with the relative incidence reported by other authors. Involvement of the inferior artery in one case and of the inferior vein in two cases presents a rather high incidence of such involvement.

The source of mesenteric vascular occlusion varies as to whether the artery or the vein is involved. Superior mesenteric arterial occlusion occurs either because of thrombosis or of embolism. Thrombosis was found more often following operation associated with conditions predisposing to thrombosis, such as splenic anemia and severe grades of arteriosclerosis, than when other conditions were present. Embolism was more frequently associated with degenerative heart disease or with acute valvular disease than with other diseases (table 2). Arteriosclerosis accounted for the occurrence of the case of thrombosis of the superior and inferior mesenteric arteries.

Occlusion of the superior mesenteric vein occurs secondary to ascending thrombosis usually attributable to infectious processes, secondary to descending thrombosis from the associated portal vein or secondary to hepatic disease, or it follows an abdominal surgical operation. Hepatic cirrhosis was noted in some cases of splenic anemia and may have been contributory to thrombosis in these cases following splenectomy (table 2).

PATHOLOGY

Vascular occlusion was complete in each case studied. There was associated thrombosis of the portal vein in eighteen cases (30 per cent) and there existed associated pulmonary thrombosis in seven (11.6 per cent). There was one case in which associated thrombosis of the celiac axis had occurred and gangrene of the mucous membrane of the stomach was observed. Also, in a few cases, old organized nonocclusive thrombi were present

TABLE 2.—*Summary of Source of Mesenteric Occlusion*

Source or Cause	Artery	Vein	Combined Artery and Vein	Total
Cardiac disease.....	9	1	5	15
Splenectomy for splenic anemia.....		8		8
Arteriosclerosis.....	5	1	2	8
Hepatic disease.....		6	1	7
Acute abdominal infections.....		6	1	7
Postoperative; abdominal operation.....	3		2	5
Unknown.....	1	3		4
Other causes.....	1	2	3	6
Total.....	19	27	14	60

in the superior mesenteric vessels, indicating that the patient previously had survived mesenteric thrombosis which was not completely occlusive.

Involvement of the bowel varied in extent from a few inches to include all the small bowel and the right half of the colon. The earliest examinations of the bowel were made from seven to eighteen hours after onset of symptoms and revealed an edematous, congested, deep red or bluish intestinal wall, frequently stretched by distention to a moderate degree and presenting a somewhat granular surface. The mesentery was dark, doughy and thickened as the result of hemorrhage. This is the picture of hemorrhagic infarction of the bowel. Infarction of the bowel is practically always hemorrhagic in

type, as has been shown previously by Dye,¹ Jones² and others. Recovery of the bowel is possible early in this stage, but the process usually proceeds rapidly to a state of gangrene. Accompanying this gangrene is bloody ascites and the bowel usually is distended, not with gas but with fluid blood. The bloody ascites is almost pathognomonic of gangrene and is considered by Warren and Eberhard³ to be probably a transudate from the congested, hemorrhagic, infarcted bowel. The blood within the bowel comes from the gangrenous mucous membrane, that part of the wall of the bowel in which gangrene occurs first in all probability. Considerable blood is lost in this way and manifestly adds considerably to the late shock so frequently seen. Perforation of the bowel was not observed in this series of cases; peritonitis, however, was common, being the end result of the process. Complete gangrene of the bowel with bloody ascites and a blood-filled lumen was seen as early as eighteen hours following onset of symptoms. Rapid progression of the pathologic changes is illustrated by the case of a man aged 54 who had myocardial degeneration and auricular fibrillation. Exploration nine hours after onset of symptoms revealed a dark, edematous jejunum, the changes extending down into the ileum, and necropsy twenty-four hours after onset of symptoms revealed gangrene of the jejunum and of the upper three fourths of the ileum, with bloody ascites and bloodfilled bowel lumen. An embolus of the superior mesenteric artery was present.

Venous thrombosis may start in the fine venous radicles adjacent to the bowel or may originate in the portal vein, but progression of thrombosis is the rule in either the ascending or descending types. Progression of changes in the bowel following venous occlusion is usually not as rapid as that following arterial occlusion.

Recovery probably occurs spontaneously in some cases in which the condition does not proceed beyond an early stage of hemorrhagic infarction. Likewise, recovery may follow complete occlusion of the mesenteric artery by embolism or thrombosis. Dye collected three reports of cases in which recovery from a typical attack occurred, the patients later dying of other causes and, at necropsy, an obliterated superior mesenteric artery being found. Collateral circulation may be established. We have one similar case in our series. A man aged 42 had experienced several previous operations on the upper part of the abdomen. Following drainage of an abscess of the abdominal wall caused by perforation of the jejunum, pyelophlebitis of the superior mesenteric vein and portal system developed, with abscesses of the liver, and he died. Necropsy revealed the superior mesenteric artery completely occluded by an organized thrombus. Collateral circulation had been established through the inferior mesenteric and gastric arteries. The intestine appeared normal.

SYMPTOMS AND DIAGNOSIS

One definite symptom complex of mesenteric vascular occlusion cannot be recorded, for there exists a wide variation in the extent of pathologic changes and in the mode of onset. Only a few inches of bowel may be involved, or gangrene of the whole of the small bowel and even of part of the colon may be present. Also there may occur a sudden, prostrating arterial occlusion or a more slowly progressive venous occlusion.

The presenting symptoms are those of an acute abdominal emergency. There are, however, a few symptoms which, if present, are suggestive of mesenteric occlusion. Pain was the most common symptom in our series and occurred in practically every case. When arterial occlusion was present, the pain was described as being sudden, severe and more frequently generalized than localized to the epigastrium. The pain in cases of combined arterial and venous occlusion was similar to that accompanying arterial occlusion, although occasionally it was described as a generalized, dull, cramping pain. Venous occlusion frequently gave rise less suddenly to pain, but the pain was severe and more often generalized than localized to the epigastrium. However, the severe pain of venous occlusion was preceded in a few cases for varying periods of time by a less severe, dull, aching pain. In all three types the pain was more frequently constant than intermittent or cramping in nature.

Vomiting was the next most frequent symptom. It occurred in about 75 per cent of the cases of arterial and combined arterial and venous occlusion and in 50 per cent of the cases of venous occlusion. Vomiting at first was of reflex type and was productive of gastric

TABLE 3.—Surgical Treatment of Mesenteric Vascular Occlusion

Operation	Cases
Exploration	7
Enterostomy	7
Mikulicz resection	2
Resection and anastomosis	1
Freeing volvulus	1
Reduction internal hernia	1
Total	19

content only; vomiting was somewhat protracted and the vomitus was contaminated with blood in only three cases (5 per cent).

Distention occurred in twenty-nine cases (48.3 per cent); it was considerably more common in the presence of venous occlusion than in that of arterial, or combined arterial and venous occlusion. It usually was of only moderate degree. When the thirty-three cases of arterial and combined arterial and venous occlusion are considered, signs were as follows: The abdomen was described as rigid in seven (21 per cent) and tender in five (15 per cent). The abdomen was tender in only one case of venous thrombosis, and rigidity was not noted in the presence of venous thrombosis.

Constipation was noted much more frequently than diarrhea. Blood was noted most often in the cases of venous thrombosis, either in the stool spontaneously evacuated or following an enema; this occurred in ten of the twenty-seven cases of venous thrombosis, or 37 per cent. When the thirty-three cases of arterial or combined arterial and venous thrombosis are considered, blood was noted in only four cases (12 per cent), making a total of fourteen in the series of sixty cases, an incidence of 23 per cent. Although blood was noted in only 23 per cent of the sixty cases, its presence in the stool spontaneously or following an enema is a valuable diagnostic sign.

Shock was noted in nine of the nineteen cases (47 per cent) of arterial occlusion and in five of the fourteen cases (36 per cent) of combined arterial and venous occlusion but in only two of the twenty-seven cases (7 per cent) of venous thrombosis.

The number of leukocytes was higher than that usually associated with occurrence of other abdominal

1. Dye, W. J. P.: Mesenteric Thrombosis, *New England J. Med.* 212: 105-108 (Jan. 17) 1935.
2. Jones, H. W.: Recurring Mesenteric Thrombosis, *Am. J. Surg.* 22: 318-320 (Nov.) 1933.
3. Warren, Shields, and Eberhard, T. P.: Mesenteric Venous Thrombosis, *Surg., Gynec. & Obst.* 61: 102-121 (July) 1935.

emergencies. The higher values were associated with arterial occlusion, rising rapidly and reaching as high as 35,000 per cubic millimeter of blood within eight hours after the onset of symptoms. The average number of leukocytes recorded in cases of arterial occlusion was 27,000. In cases of combined arterial and venous occlusion the average number was 22,000. In the presence of venous occlusion the range of the number of leukocytes was more variable; the average number was 20,000.

It is probably of academic interest only to discuss points of differential diagnosis between arterial and venous occlusion, for retrograde venous occlusion may follow arterial occlusion and likewise, when venous circulation is blocked, arterial circulation may eventually become occluded. However, discussion of symptoms may help perhaps in recognition of mesenteric vascular occlusion. Pain was severe in the presence of both types of occlusion, more frequently sudden and prostrating in the presence of arterial occlusion, more frequently progressively severe in the presence of venous occlusion. Vomiting was more frequently associated with arterial occlusion, accompanying the severe, sudden attacks of pain. The abdomen in the presence of arterial occlusion was more frequently rigid and tender but much less frequently distended than when venous occlusion was present. Constipation was common to the two but bleeding from the rectum was decidedly more frequent in the cases of venous occlusion. Shock was infrequent when primary venous thrombosis occurred and was frequent when arterial occlusion was present. The number of leukocytes was elevated more consistently and to higher levels in the presence of arterial occlusion than when venous occlusion was present. The usual course of the disease following onset of symptoms varied from eighteen hours to three days; it was probably somewhat more rapid in cases of arterial occlusion.

PROGNOSIS AND TREATMENT

The prognosis of mesenteric vascular occlusion, even when recognized and treated very early, is extremely poor. The poor condition of the patient soon after onset of the condition often precludes surgical intervention and, if the patient is operated on, occlusion and involvement of the bowel are frequently so extensive that resection of the involved portion cannot be carried out with any hope for survival of the patient. Finally, thrombosis may continue to extend after excision of the originally involved segment of the bowel and of mesentery has been accomplished.

In most of the cases of our series the entire small bowel was beyond restitution, even though exploration was carried out as early as nine hours after onset of symptoms. Table 3 indicates the procedures resorted to. Of the three cases in which recovery occurred, resection of the involved portion was carried out in one, release of volvulus was effected in another, and a Mikulicz type of extraperitoneal resection of the involved segment of bowel was performed in the third. These three patients had less extensive involvement than the others. It seems that no one surgical procedure is best and any sound operative procedure in surgery of the bowel is applicable. The extensiveness of the disease, the tendency for thrombosis to progress or to recur following operation and the results of gangrene, namely, hemorrhage and peritonitis, make for the universally high mortality.

SUMMARY AND CONCLUSIONS

In this series of sixty proved cases of mesenteric vascular occlusion, in thirty-six (60 per cent) the condition was unrelated to any surgical procedure and in twenty-four (40 per cent) it occurred following some surgical procedure. Surgical measures were resorted to in treatment of the occlusion in only nineteen cases (31 per cent) with a mortality rate of 84 per cent. The condition of the forty-one remaining patients precluded any hope of surgical intervention. Arterial occlusion occurred in nineteen cases (31.7 per cent), venous occlusion in twenty-seven cases (45 per cent) and combined arterial and venous occlusion in fourteen cases (23 per cent). Cardiac disease, hepatic or splenic disease, arteriosclerosis and acute abdominal infections were the predominant factors in the etiology of mesenteric vascular occlusion.

The symptoms were those of an abdominal emergency. Pain was the most common symptom and was more sudden and severe in arterial occlusion. Vomiting was frequent. Rigidity and tenderness were more common with arterial occlusion, while distention alone was more suggestive of venous occlusion. Bleeding from the bowel occurred decidedly more frequently in the cases of venous occlusion but occurred in only fourteen cases (23 per cent) of the series; it is a valuable diagnostic sign if present. The leukocyte count was elevated to higher levels than that usually encountered in the more frequent abdominal emergencies. The rapidity of progress, the extensiveness of the disease and the tendency for progression or recurrence following operation make for poor prognosis.

Clinical Notes, Suggestions and New Instruments

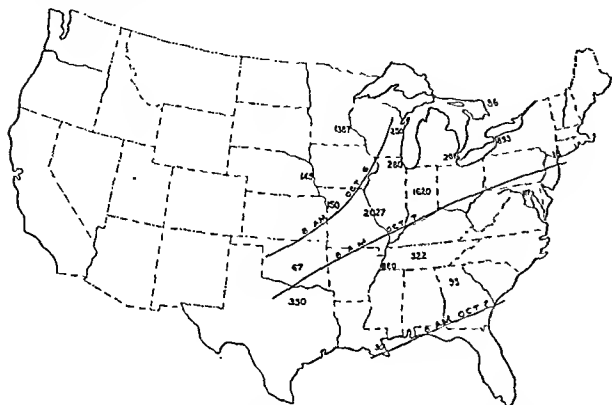
AN UNUSUAL SHOWER OF FUNGUS SPORES

O. C. DURHAM, NORTH CHICAGO, ILL.

A striking instance of atmospheric transport of vegetable allergens is afforded by the figures for the incidence of *Alternaria* and *Hormodendrum* spores on October 6 and 7 throughout the eastern part of the United States. Weather bureau records show that on these two days air masses from the Northwest at elevations of from 2,000 to 6,000 feet moved rapidly southeastward and eastward, covering the distance from Minnesota to the Atlantic seaboard and the gulf in about fifty-five hours. During this time thousands of tons of mold spores were transported an average distance of several hundred miles. At nearly every station on and east of the Mississippi River where records were taken the catch of *Alternaria* spores during one or the other of the two days of the storm exceeded that found on any other day during the entire summer and fall. Figures were particularly high in Minneapolis, St. Louis, Memphis, Indianapolis, Buffalo and Cleveland, but an acute rise in the spore count was found as far east as New York and Washington, D. C., and as far south as New Orleans. The intensity of the storm can be best appreciated by a comparison of the slide counts for the day of the storm and the average figure for October. At seventeen stations the average increase in the *Alternaria* spore count during the storm was 100 times that of the mean daily count for the month of October (exclusive of the day of the storm). In the tier of states from Texas to North Dakota the wave of fungus spores was noticeable but not so striking as in the area previously mentioned.

The point of origin of the atmospheric load is somewhat uncertain, but quite likely it was in southern Minnesota. At Minneapolis the deposit on the slide probably occurred early

on the morning of October 6. By the next morning at 8 o'clock the effect had been felt as far east as New York City and as far south as Oklahoma City. During the day and the following night the storm reached Dallas, Memphis, Nashville, Atlanta, Washington, D. C., and New Orleans. It is unlikely that these spores originated locally in each area, because the velocity of surface winds on the dates given was not unusually high. Moreover, it is difficult to believe that a crop of mold spores could have matured in such unusual quantities simultaneously in so large an area.



The figures show the total *Alternaria* spore count at the various stations on the day of the maximum deposit of these spores during the storm described. The area counted was 1.8 sq. cm. on a petrolatum-coated slide exposed for a twenty-four hour period.

The phenomenon was doubtless due to the transport of mold spores by large air masses rather than by the temporary agitation of locally produced spores. In my ten year study of the behavior of atmospheric pollen I have not observed a transfer of allergen particles so striking in amount or over such a widespread area.

Such a shower of allergen particles can easily account for a sudden exacerbation of hay fever symptoms. A brief inquiry has disclosed the correlation of clinical symptoms with the advent of this storm in some of the places affected.

Abbott Laboratories.

DERMATITIS CAUSED BY DIETHYLENE GLYCOL IN TOBACCO

BEN A. NEWMAN, M.D., LOS ANGELES

P. H., a white man, aged 39, an aviator, complained of a dermatitis of the left index and middle fingers of six weeks' duration and of the left upper lip of four weeks' duration. Two months before, he had been in a hospital for a period of six months because of fracture and amputation of one thigh. He stated that there was no personal or family history of allergy. The eruption was pruritic. It consisted of pinpoint to pinhead size vesicular and scaling lesions on an erythematous base. The borders were ill defined and gradually faded into the normal skin. Wet dressings of solution of aluminum acetate were prescribed for two days, and this was followed by a single fractional dose of superficial x-ray irradiation and zinc ointment U. S. P. Two weeks later the eruption on the fingers was greatly improved but that on the lip remained unchanged. In the meantime an identical eruption had developed on the same fingers of the other hand. Since the patient was an inveterate cigaret smoker and the location of the lesions was the site of direct contact with the cigaret, patch tests were done with the suspected agents. He was tested with the tobacco and paper of the three brands of cigarets he had been in the habit of smoking. A reaction, i.e., vesiculation, was obtained to the tobacco of one brand after forty-eight hours of contact. This was the cigaret containing diethylene glycol and the brand which the patient had started to use only from two to four weeks before the onset of the dermatitis. A subsequent patch test was done with a 5 per cent aqueous solution of diethylene

glycol; this test was also applied to two other persons as controls. After twenty-four hours of contact, only the patient showed a positive reaction.

The eruption on the right hand appeared when the patient had shifted the cigaret to those fingers after dressings and bandages were applied to the fingers originally involved. Two weeks after he stopped using this brand of cigaret the patient was entirely well.

SUMMARY

In the case reported, contact dermatitis proved to be caused by diethylene glycol.

3875 Wilshire Boulevard.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

ACOUSTICON HEARING AIDS (CORONATION MODELS) ACCEPTABLE

Manufacturer: Dictograph Products Company, 580 Fifth Avenue, New York.

Three Coronation Models of Acousticon Hearing Aids, each instrument consisting of a carbon ball type microphone transmitter, a plug-in style carbon-particle type amplifier, a current-varying rheostat, a plug-in type air conduction midget receiver or, interchangeably, a bone conduction type oscillator, and the usual connecting cords and batteries, were examined by the Council. The bone conduction oscillators, the air conduction receivers and the carbon particle amplifiers were each supplied in three nominal frequency ranges, low, intermediate and high; each one of the three Coronation Model hearing aids could be combined with any of the component parts selected at will within the three frequency ranges.

MODEL C-2.—The distinguishing feature of this model is a carbon ball type microphone transmitter, housed in a metal case measuring $2\frac{1}{4}$ inches across the face and about one-half inch thick. It is finished in lacquered gold on the front perforated face, with a clip on the rear for fastening the microphone to the clothes. A further feature of this model is a separate current-varying rheostat about the shape and size of an average fountain pen cap, also furnished with a spring clip for fastening to the clothes. As already mentioned, the plugs and jacks which terminate the cords furnished may be used to place in circuit any pieces from a threefold selection of

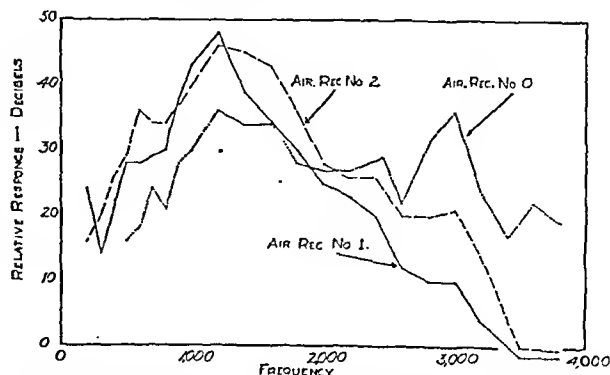


Fig. 1.—Relative response of Coronation Model air conduction midget receivers only.

amplifiers, air conduction receivers having interchangeable form fitting ear pieces or bone conduction oscillators held in place with a spring band, and plug-in type batteries in either 3 or $4\frac{1}{2}$ volt size.

MODEL C-4.—This model is distinguished by a carbon ball type microphone transmitter housed in a molded bakelite case, measuring $3\frac{1}{4}$ inches across by $\frac{1}{2}$ inch thick, with a semi-

circular projection at one side carrying a rheostat. The front face of the microphone case is perforated in the central region by a number of holes forming together a symmetric pattern. On the back of the case is a spring fastening clip.

MODEL C-6.—This model appears externally to be identical with Model C-4, differing only in that in the front face of the microphone case are indentations for a series of holes near the outer periphery. These are outlined but not punched out as in the Model C-4. In addition, near the center are three small holes about one thirty-second inch in diameter.

All the instruments and components are apparently well constructed and finished. The plugs, bone conduction oscillators and amplifiers are shaped so as to be free from sharp corners and so as to fit together smoothly.

Test Method.—Because of the large number of combinations possible with each of the models and because of the various interchangeable components, it was decided to limit the final and decisive intelligibility, articulation and gain tests to that combination of parts which was best suited to normal human hearing. Accordingly the frequency-response characteristics of the various components were determined separately. The air conduction receivers and the bone conduction receivers, because of the nature of their construction, appear to be stable in their performance. The data obtained may be used to predict what results will be achieved when these parts are used in combination with other components. Figure 1 shows the relative response obtained by using an artificial ear for testing the air

weeks, in which eighteen male and seventeen female observers were used both as listeners and as readers. Battery voltages were not allowed to diminish with time but were kept up to the full value furnished by new batteries of large capacity. The gain in intensity shown in the last column of the table should therefore be regarded as the maximum gain obtainable, on the average, by the use of full strength batteries.

It will be seen that the sentence intelligibility is relatively high for all models and for all conditions of use, tending to diminish moderately, however, as the volume is increased through the use of high voltage and larger rheostat currents. Syllable articulation shows the same trend. While the intensity gain is not extremely large even for the highest setting, the fact that the intelligibility keeps to a high value is a good indication that the intensity gain is largely a real loudness gain of usable speech sounds, and not mere noise. It was also directly observed by an overall continuously variable single frequency run that the combination of parts here used was comparatively free from large amplification peaks and noisy admixtures.

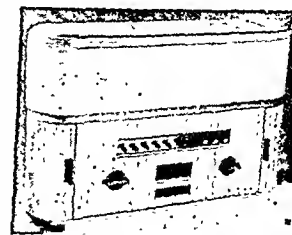


Fig. 3.—Aurogauge used for fitting hearing aids.

Bone Conduction Tests.—The three hearing aid models were also tested by using the intermediate frequency bone conduction oscillator, marked with a single white dot by the manufacturer. Only sentence intelligibility tests were performed, since no method of rating the loudness gain has as yet been defined. The results, while not as clearly consistent as for the air condition receivers, nevertheless, gave values comparable to those shown in the table. Also when a 4½ volt battery was used and with the rheostat turned full on, the ears being stopped by wide mouthed jars, there is a distinct and marked acoustic transmission and a hearing gain over that obtained by direct transmission of air borne sounds through the head.

Conclusions.—It is concluded that all three Coronation Models, C-2, C-4 and C-6, when used with the components stated, give satisfactory results both for air aid and for bone conduction as regards sentence intelligibility, syllable articulation and loudness gain. When used with other combinations of components, the performance cannot be predicted but must be uniquely determined for each individual. Apparently the instruments have been carefully designed, and intelligibility has not been sacrificed for an apparent high gain in loudness. The batteries furnished, namely, manufacture numbers 9 and 7, being 3 and 4½ volts battery respectively, also give evidence of careful construction.

In view of the foregoing report the Council on Physical Therapy voted to include the three models, C-2, C-4 and C-6, of the Coronation Acousticon Hearing Aids in its list of accepted apparatus.

AMPLIFYING STETHOSCOPE (MARBEL) ACCEPTABLE

Manufacturer: Marbel Blood Calculator Company, 3267 South Halsted Street, Chicago.

The Amplifying Stethoscope (Marbel) is designed to make audible heart sounds throughout a room or adjoining rooms by means of a loud speaker. The outfit consists of an amplifier, a microphone and a loud speaker. Twenty feet of wire allows the operator to locate the speaker in a convenient place.

This electrical stethoscope enables physicians to hear any irregularities of the amplified heart sounds of patients under surgical anesthesia, and of the mother or the fetus during pregnancy or early stages of labor. It may be used for mass stethoscopic examinations of recruits, factory workers and students.

In order to reach the right amount of amplification, it is advisable for the physician to place the stethoscope-microphone over his own heart and turn the adjusting knobs until the audible sounds are clear. By turning the knobs, the sounds may be made weaker or louder. Care should be exercised in placing the loud speaker, since the microphone and amplifier are highly sensitive and regenerated electrical oscillations may

Intelligibility, Articulation and Intensity Gain

Models*	Sentence Intelligibility, per Cent			Syllable Articulation, per Cent			Intensity Gain, Decibels		
	C-2	C-4	C-6	C-2	C-4	C-6	C-2	C-4	C-6
With 3 volt battery; rheostat full on.....	93	95	93	54	49	53	10.5	10.5	16
With 4½ volt battery; rheostat ½ on.....	93	87	91	52	49	46	15.5	9	15
With 4½ volt battery; rheostat full on.....	93	94	83	44	40	46	26	22	26

* All models equipped with air conduction receiver 0 and carbon microphone 3.

conduction receivers as designated by the Dictograph Products Company, numbers 0, 1 and 2. As will be seen from the curves, receiver 0 has the most nearly uniform response characteristic of the three and is the only one which has a considerable output above 3,500 cycles per second. Accordingly, in the final intelligibility tests, only receiver 0 was used.

Similar data, not included in this report, were obtained for the carbon particle amplifiers and revealed that amplifier 3 had the most nearly uniform response characteristic. Moreover, it was verified that the combination of receiver 0 and amplifier 3 gave the highest value of sentence intelligibility with any of the three models of microphone transmitters.

It is possible that for a person having a hearing loss which varies in a complementary way over the acoustic frequency scale a combination of a different numbered receiver and amplifier would give better overall results for that individual.

But when persons with normal hearing are used as observers, the combination stated is the one yielding the most favorable results. Moreover, there is no logical possibility of comparing results so obtained with those obtained from experimentation with persons suffering from hearing defects.

Summary of Results.—Since the three hearing aid models are interchangeable with respect to their other components, the results obtained may be compared when exhibited in tabular form as shown in the table. The tabular values are averages of a great number of separate tests, extending over several



Fig. 2.—Acousticon Hearing Aid, Coronation Model.

build up and produce a high squealing sound. If the loud speaker is moved away, the oscillations are not built up so readily. The microphone may be attached with two pieces of adhesive tape to the patient's chest for heart and lungs, to the abdomen of the lying-in patient for the fetal heart, to the arm for blood pressure sounds, or to the bowel for borborgymi above the point of bowel obstruction. Experience is required by the operator to interpret pathologic conditions of the heart.

Investigated in a clinic acceptable to the Council, this stethoscope gave satisfactory service for listening to the heart beats and also amplifying fetal heart sounds before and during the first stages of labor. During the later stages it was not as satisfactory, since difficulty was experienced in keeping the microphone in place.

In view of the foregoing report, the Council voted to accept the Amplifying Stethoscope (Marbel) for inclusion in its list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
PAUL NICHOLAS LEECH, Secretary.

NONPROPRIETARY SYNONYM FOR BENZEDRINE AND BENZEDRINE SULFATE

Smith, Kline & French Laboratories inquired concerning the adoption of a descriptive synonym for their trademark, "Benzedrine," since many different terms are being used. At the suggestion of the Council, the firm agreed to adopt the term "alpha methylphenethylamine" as the descriptive chemical name for the substance introduced in therapeutics as Benzedrine. Subsequently, the firm wrote that it understood that when the chemical name is unwieldy a shorter generic name should also be recognized, and suggested "amphetamine" as the coined generic name for alpha methylphenethylamine. The Committee on Nomenclature preferred "amphetamine" to avoid possible misinterpretations of the firm's term. In reply to this suggestion the firm wrote:

"This name [amphetamine] is entirely acceptable to us and we feel that there will be no confusion with any existing names or trade marks."

The Council therefore adopted the name "Amphetamine" as the nonproprietary synonym for Benzedrine, and "Amphetamine Sulfate" as the synonym for Benzedrine Sulfate.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION

PAUL NICHOLAS LEECH, Secretary.

BENZEDRINE SULFATE.—Amphetamine sulfate.—Racemic desoxy-norephedrine sulfate.—Racemic benzyl-methyl carbinamine sulfate.— $[\text{C}_6\text{H}_5\text{CH}_2\text{CH}(\text{NH}_2)\text{CH}_2]_2\text{H}_2\text{SO}_4$.

Actions and Uses.—Benzedrine sulfate is useful in the treatment of narcolepsy, for controlling symptoms similar to those of narcolepsy in the treatment of postencephalitic parkinsonism, in the treatment of certain depressive psychopathic conditions as indicated below and for facilitating roentgenographic studies of the gastrointestinal tract.

Its use is not recommended in the treatment of sleepiness and fatigue in normal individuals because of the possible danger of pressor effects from continued use, because of the dangers of eliminating the warning signal of sleepiness in individuals who are overdoing, because of the possibility of habit formation or addiction from such use and because cases of collapse have ensued when the drug has been used for this purpose. Its use is not recommended for developing a sense of increased energy or capacity for work, or a feeling of exhilaration or as a "pick-me-up" in individuals other than those under the strict supervision of the physician. Its use in depressive psychopathic

cases should be confined to patients in institutions, since the dangers involved in the use of the drug for this purpose in those going about their daily tasks are similar to the dangers mentioned in connection with fighting off sleep. It has been used in the treatment of spastic colitis and pyloric spasm and in many other clinical conditions not mentioned above, but its use for these purposes is not recommended at present.

The very nature of the therapeutic effects, as well as the side actions of this drug, requires that its use be promoted with proper caution as to pressor effect, hyperexcitability, gastrointestinal disturbance, restlessness, sleeplessness and in over-dosage, chills, collapse and syncope. It should also be carefully noted that the drug is contraindicated in cardiovascular disease, especially when hypertension is a sequence of that disease.

Dosage.—The use of this drug should be instituted with a dose of 10 mg. and increased gradually to 40 mg., depending on the amount needed for therapeutic effect and on the condition in which it is employed. In certain cases it may be necessary to repeat the use of the drug three times daily, but it is recommended that such a dosage not exceed 10 to 20 mg. It is preferable, if possible, to administer the effective quantity of this drug during the morning, to avoid interference with sleep.

Manufactured by Smith, Kline & French Laboratories, Philadelphia, Pa. U. S. patent 1,921,424 (Aug. 8, 1933; expires 1950) 1,879,003 (Sept. 27, 1932; expires 1949) and 2,015,408 (Sept. 24, 1935; expires 1952). U. S. trademark 272,377.

Benzedrine Sulfate Tablets: Each tablet contains benzedrine sulfate, 10 mg. (0.01 Gm.).

Benzedrine sulfate occurs as a white, odorless powder; freely soluble in water, slightly soluble in alcohol; insoluble in ether. Its aqueous solution is neutral to litmus. Benzedrine sulfate melts at over 300 C.

Place 1 Gm. of benzedrine sulfate in an Erlenmeyer flask, add 50 cc. of water and 5 cc. of 40 per cent sodium hydroxide solution; then add benzoyl chloride, 0.5 cc. at a time; shake the flask after each addition; add the benzoyl chloride until no more precipitate forms after an addition; recrystallize twice from 50 per cent alcohol solution, dry the crystals; the melting point is 134-135 C.; the nitrogen content of the benzoyl derivative by the micro Dunas method is not less than 5.70 per cent nor more than 5.95 per cent.

Dry about 0.5 Gm. of benzedrine sulfate, accurately weighed, to constant weight at 100 C.; the loss does not exceed 1 per cent. Incinerate about 0.5 Gm. of benzedrine sulfate, accurately weighed; the residue is not more than 0.1 per cent.

Transfer 0.3 Gm. of benzedrine sulfate, accurately weighed, to a beaker and dissolve in 200 cc. of water and 2 cc. of normal hydrochloric acid. Boil and add 10 cc. of boiling 1 per cent barium chloride solution. Allow to stand overnight, filter, wash until free from chloride, ignite at low red heat to constant weight, cool, and weigh; the sulfate content is not less than 25.5 per cent nor more than 26.4 per cent.

Dissolve 0.25 Gm. of benzedrine sulfate, accurately weighed, in 25 cc. of water in a separatory funnel. Add 3 cc. of 10 per cent sodium hydroxide solution and extract with six 15 cc. portions of ether. Filter the ether extracts into a glass stoppered flask and shake with 20 cc. of tenth-normal hydrochloric acid. Evaporate the ether on a steam bath; add one drop of methyl red solution and titrate the excess acid with tenth-normal sodium hydroxide solution; the benzyl-methyl-carbinamine content is not less than 72 per cent nor more than 73.5 per cent.

NICOTINIC ACID.—3:Pyridine Carboxylic Acid.— $\text{C}_6\text{H}_4\text{O}_2\text{N}$.

Actions and Uses.—Nicotinic acid is accepted for purposes of standardization and clinical experimentation on its use in pellagra.

Dosage.—Experimentally, 0.5 Gm. in five 0.1 Gm. doses daily.

Nicotinic Acid (3:Pyridine Carboxylic Acid)—SMA Co.—A brand of nicotinic acid-N. N. R.

Manufactured by the S. M. A. Corporation, Cleveland. No U. S. patent or trademark.

Vials Nicotinic Acid-Smaco, 5 cc.: Each vial contains 30 mg. of nicotinic acid in sterile physiologic solution of sodium chloride.

Vials Nicotinic Acid-Smaco, 10 cc.: Each vial contains 10 mg. of nicotinic acid in physiologic solution of sodium chloride.

Tablets Nicotinic Acid-Smaco, 20 mg.

Tablets Nicotinic Acid-Smaco, 100 mg.

Nicotinic acid occurs as white, odorless crystals; 0.7 Gm. dissolves in 100 cc. of water at 25 C.; readily soluble in hot water and alcohol, difficultly soluble in ether. An aqueous solution is faintly acid to congo red. The melting point (microscopic melting point apparatus) is 235 C. (rate of heating, 4 degrees in one minute).

Dissolve about 0.05 Gm. of nicotinic acid in 5 cc. of hot water, add 0.05 Gm. of flavianic acid, evaporate carefully to dryness and take up with 5 cc. of cold water; centrifuge the mixture and wash the precipitate three times with 2.5 cc. portions of cold water; recrystallize the solid from 5 cc. of hot alcohol; centrifuge and wash the crystals twice with 3 cc. portions of ether, filter and dry the crystals; the melting point is found to be 249-250 C. (microscopic heating stage-heating time 30 degrees in one minute), $\alpha = 1.498$.

Dissolve 0.05 Gm. of nicotinic acid in 25 cc. of distilled water, add 2.5 cc. of copper sulfate solution 10 per cent; gradually a dark blue precipitate of copper nicotinate forms. Transfer 0.05 Gm., accurately weighed, to a small platinum dish and incinerate; during the charring, a strong odor of pyridine is evolved; the ash is negligible. The U. S. P. XI test for halogens is negative. Transfer 0.1 Gm. to a vessel and dry for five hours, at reduced pressure, 2 mm. of mercury in an Abderhalden dryer at 80 C. over phosphorus pentoxide; moisture content should not be more than 0.1 per cent.

Transfer about 0.05 Gm. of nicotinic acid, accurately weighed, to a beaker. Add 20 cc. of boiled distilled water and titrate with 0.1 normal sodium hydroxide, using phenolphthalein as indicator; the alkali used is equivalent to not less than 99.0 per cent nor more than 101.0 per cent nicotinic acid; one cc. 0.1 normal sodium hydroxide is equivalent to 0.0123 Gm.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . "Medic, Chicago"

Subscription price Seven dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, JULY 2, 1938

THE SAN FRANCISCO SESSION

More than 6,000 physicians registered their attendance at the San Francisco session, making this the largest meeting of physicians ever held on the Pacific Coast. Noteworthy features of the meeting were the message of Miss Josephine Roche announcing the National Health Conference, to be held in Washington July 18-20, and the reply of the House of Delegates to that message (see pages 52 and 56), the numerous resolutions concerning the relations of physicians to hospitals and to the public, and the Scientific Exhibit. This exhibit has come to be recognized as a week of opportunities for graduate education not equaled by any similar opportunity available to the medical profession.

Contrary to the expectations of agitators who endeavored to incite disharmony and revolt among the physicians who represent the medical profession in the House of Delegates, the House displayed a singleness of purpose and soundness of attitude in its concern with the important questions which came before it. The fundamental principles adopted at Cleveland were reiterated as basic to a high quality of medical service. The importance of economic factors in a solution of the health problem was emphasized. The importance of education of the public, using all the available means for reaching great numbers of people, was again recognized and the work of the headquarters office toward that end was unanimously approved.

In the scientific sections the attendance was frequently beyond the capacity of even the large halls which had been assigned to them. Moreover, many of the topics which have been in the forefront of medical consideration during the past year were exhaustively considered, including particularly blood dyscrasias, industrial diseases, and new methods in the treatment of psychiatric conditions.

Exhibitors in the Technical Exhibit expressed great satisfaction in the attendance and also in the newness of the audience which they were enabled to reach. This audience included great numbers of physicians from the Pacific Coast and Far Western states who do not

frequently have opportunity to attend an annual session of the American Medical Association, with all the varied opportunities for medical advancement that such a session offers.

The medical profession of San Francisco and particularly the officials who were concerned with the arrangements for the annual session deserve the appreciation of all the members of the Association for the efficiency with which they worked. Particularly must credit be given to Dr. Howard Morrow, elected Vice President of the Association, as chairman of the Local Committee on Arrangements. For a year he had been working on the plans for this session. An unfortunate illness made it impossible for him to participate in any of the activities of the week of the annual meeting, but even while incapacitated in bed he kept constantly in touch with the various affairs, ably assisted by two physicians, Dr. Junius B. Harris and Dr. J. C. Geiger, who took care of the details for him.

The many visitors to the annual session, including members of the House of Delegates, expressed almost unanimous satisfaction with the San Francisco session as the most successful medical meeting ever held on the Pacific Coast.

RELATIONSHIP OF VITAMINS TO ENZYMES

The progressive development of knowledge regarding the chemistry and physiology of naturally occurring organic compounds invariably results in an increasing number of demonstrable integrations of the vast body of accumulating information. The final picture thus evolved often provides unexpected chapters in the story of the chemistry of certain of the fundamental processes in the organism. Among the most interesting examples of this situation have been the relationships between certain vitamins of the so-called B complex and some enzymes of prime importance in metabolism.

Several of the enzymes which are concerned in the oxidation and reduction reactions of the cell are conjugated proteins in which the conjugating or prosthetic groups contain one of the vitamins of the B complex. In each of these cases the vitamin, or a molecule of which the vitamin is a part, has been coupled with a protein carrier and the combination exhibits either enzymatic activity or, in certain instances, may be a member of a system which is necessary for the activation of an important enzyme. The three vitamins which are known to exhibit this relationship to enzymes are all members of the B complex. One of these, riboflavin, is a member of the flavin system,¹ an important oxidative chain in the organism. In the flavin system there is present as one member a flavin-containing enzyme which, chemically, is a protein bearer to which is coupled riboflavin phosphoric acid. As another example of the relationship of vitamins to enzymes, one may cite

1. The more recent developments are given in the Annual Review of Biochemistry 6: 335, 1937.

cozymase, which has a fundamentally important part in fermentation, glycolysis and respiration. This coenzyme contains nicotinic acid amide as a component of its chemical configuration.¹ The significance of the latter compound has been increased by the demonstration that it is probably identical with the pellagra preventive factor;² the latter is a member of the vitamin B complex. As a portion of the cozymase molecule, nicotinic acid amide becomes an essential link in the chain of catalysts involved in certain biologic oxidations and reductions. A third example of the role of vitamins in enzyme activity is the association of thiamin with pyrophosphoric acid as a component of an important enzyme system. It has been identified as coenzyme B, or the coenzyme of carboxylase, the enzyme which appears to be responsible for promoting the anaerobic breakdown of pyruvic acid in mammalian tissue.

Mutual benefits have been derived from the simultaneous expansion of knowledge in the fields of enzymes and of vitamins. The information available regarding the chemical constitution of certain members of the vitamin B complex has greatly facilitated the elucidation of the chemical nature of the prosthetic groups of the flavin enzyme and of coenzyme B. However, the demonstration that certain vitamins are, chemically, components of biologically important enzymes permits conclusions about the reasons for the indispensability of these vitamins and a demonstration of some of their physiologic functions. It becomes less difficult to explain the requirement of the body for certain dietary components when the latter may be assigned roles as fundamentally important as those relating to the oxidations and reductions which promote the life of the cells.

Current Comment

IN HONOR OF LUDVIG HEKTOEN

The issue of the *Archives of Pathology* for July 1938 is a special number dedicated to Dr. Ludvig Hektoen, editor of the *Archives of Pathology* since its inception in 1926, on the occasion of his seventy-fifth birthday, July 2, 1938. The number includes more than fifty contributions, with a total of 448 pages, all of these contributions being written by former assistants or associates of Dr. Hektoen in his many activities. As a Fellow of the American Medical Association, Dr. Hektoen has been especially active as chairman of the Committee on Scientific Research and as chairman of the Committee on Awards of the Scientific Exhibit. He is widely known as a contributor to the literature of medicine, with 307 items listed in his bibliography. His research on antibodies, on fungi, on iso-agglutination and on infectious diseases is recognized throughout the world. Although many men at 75 years of age

are content to rest in modest retirement, this seventy-fifth anniversary of Dr. Hektoen's birthday finds him at the peak of a great career as executive director of the National Advisory Cancer Council, under the National Institute of Health. THE JOURNAL tenders him on this occasion the congratulations of the medical profession on his birthday, and best wishes for continued health and many more years of distinguished service.

SMALLPOX IN THE UNITED STATES

According to the statistical bulletin of the Metropolitan Life Insurance Company,¹ the year 1937 witnessed another rise in the incidence of smallpox throughout the greater part of the United States. Reports received during the year indicated 11,806 cases as against 7,044 in 1936. Although the form of the disease now prevalent is mostly mild, the more deadly form might arise at any time. Indeed, such change in virulence has been noted in some epidemics. Curiously, smallpox is much more frequent in some of the less populous states, notably the eight Northwestern states. The better situation existing in the more heavily populated Eastern and Seaboard states was not always as good as it is now. The communities in which smallpox is now so relatively common may suffer a serious epidemic before the unnecessary ravages of the disease are stopped. The number of cases reported and the continued trend upward are a direct reflection of the percentage of unvaccinated among the population

THE TREATMENT OF MALARIA

The Fourth General Report of the Malaria Commission of the League of Nations² is especially valuable for its conclusions on the use of the newer synthetic drugs both in treatment and in prophylaxis. The report contains an adequate review of procedures and methods in different countries and it should be read by every one interested in the active treatment or the public health aspects of the disease. Experience has so far shown, the report states, that the eradication of malaria from a community by prophylactic treatment with drugs now available is virtually impossible. It is impossible in this way to reach in sufficient time all the inhabitants of a large area or even of a small village. Moreover, curative or prophylactic treatment may greatly diminish the morbidity, yet it cannot suppress the parasites in all the carriers. With regard to the choice of drugs for curative or prophylactic mass treatment, the report concludes that quinine still ranks first by reason of its clinical effectiveness and almost entire absence of toxicity. In certain circumstances, however, which are outlined in the report, atabrine and plasmochin offer a notable advance in the treatment and prophylaxis of malaria.

1. The Increase of Smallpox in the United States, Statistical Bulletin Metropolitan Life Insurance Company 19:3 (May) 1938.

2. Malaria Commission: Fourth General Report: The Treatment of Malaria, Bull. Health Org. League Nations 6:897 (Dec.) 1937.

3. Pellagra and Nicotinic Acid, editorial, J. A. M. A. 110:289 (Jan. 22) 1938.

THE PRESIDENT-ELECT— DR. ROCK SLEYSER

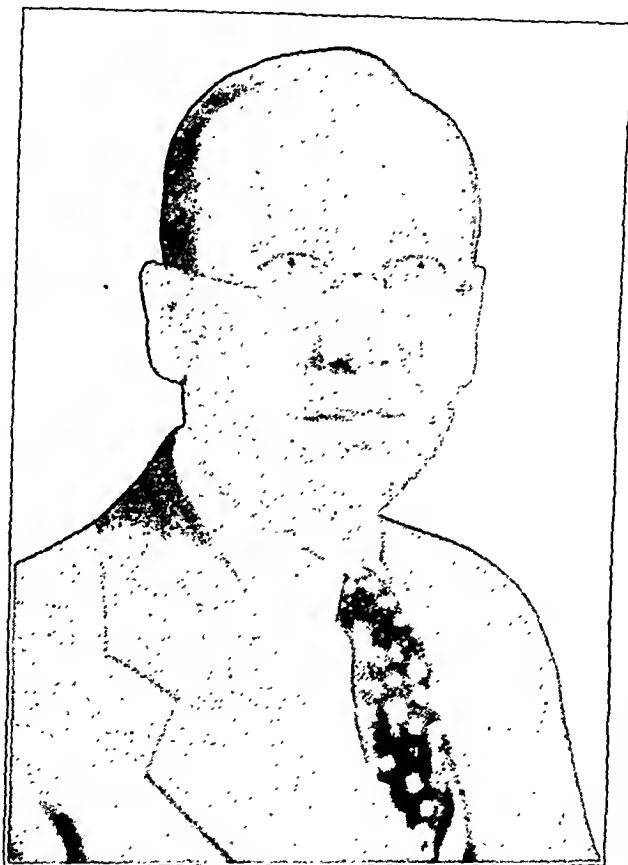
The selection of Dr. Rock Sleyser, Wauwatosa, Wis., to be President-Elect of the American Medical Association, at the annual session in San Francisco, June 16, is a recognition of long and devoted service to organized medicine in the United States. For thirty-five years Rock Sleyser has continuously held a position of service to the medical profession. In 1903 he became secretary of the Calumet County Medical Society, continuing for six years. He was elected assistant secretary of the State Medical Society of Wisconsin and secretary in 1914. He remained as secretary until 1923 and was elected president in 1924. Since 1925 he has been treasurer of the society. From 1918 to 1923 Dr. Sleyser was editor of the *Wisconsin Medical Journal*. From 1915 to 1926 he served as delegate to the American Medical Association and during the last four years of that period was Vice Speaker of the House of Delegates. He became a trustee of the American Medical Association in 1926 and served continuously until June 1937, acting as chairman of the Board from 1935 to 1937. His professional record is likewise inspiring. He was graduated by the University of Illinois College of Medicine in 1902. After practicing medicine at Kiel and Appleton, Wis., he became physician to the prison for the criminal insane at Waupun, Wis.

Here he did research, much of which was reported in leading medical periodicals. Later he directed the building of the Wisconsin Hospital for the Criminal Insane and thereafter became medical director of the Milwaukee Sanitarium at Wauwatosa, which position he still holds. He is a fellow and has been a member of the board of governors of the American College of Physicians and a member of the American Psychiatric Association, the Association for Research in Nervous and Mental Diseases, and the Central Neuropsychiatric Association. It is a noteworthy fact in his career that Dr. Sleyser has been unanimously elected to every office which he has occupied, never having been opposed by any other candidate.

RUDOLPH MATAS RECEIVES DISTINGUISHED SERVICE MEDAL

The first medal for distinguished service to scientific medicine to be awarded by the American Medical Association was given to Rudolph Matas, surgeon, of New Orleans, by the House of Delegates in the election held June 13. The recipient of this medal is chosen by a process of selection which insures choice of an outstanding physician and scientist. This year the three names submitted to the House of Delegates after selective elimination of nineteen others were those of Drs. Simon Flexner, Ludvig Hektoen and Rudolph

Matas. Dr. Matas was born in Bonnet Carre, La., Sept. 12, 1860, was educated in Barcelona, Paris, Brownsville (Texas) and New Orleans, and was graduated by the Literary Institute of St. John, Matamoros, Mexico, in 1876. He received his degree in medicine from Tulane University in 1880 and has had honorary degrees from Washington University, the University of Alabama, Tulane University, the University of Pennsylvania, Princeton and the National University of Guatemala. He began the practice of medicine in New Orleans in 1880 and has specialized in surgery since 1895, when he became professor of surgery in Tulane University. He has been emeritus professor of surgery at Tulane and consultant at Charity Hospital, New Orleans, since 1928



ROCK SLEYSER, M.D.
PRESIDENT-ELECT OF THE AMERICAN MEDICAL ASSOCIATION

and honorary chief surgeon of Touro Infirmary since 1935. During the World War he was organizer and director of Base Hospital No. 24. He is a member of innumerable surgical societies throughout the world and at present is president of the Société internationale de chirurgie and honorary president of the International Surgical Congress, which will meet in Vienna next year. He has been decorated by the governments of Venezuela, Spain, France and Cuba. Dr. Matas is recognized as one of the most learned writers on surgery in the world. He is author of many treatises and monographs on surgical subjects, especially in the field of vascular surgery. By this award the American Medical Association indicates its recognition of scientific advancement as one of the main functions of organized medicine.

ORGANIZATION SECTION

PROCEEDINGS OF THE SAN FRANCISCO SESSION

MINUTES OF THE EIGHTY-NINTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, HELD AT SAN FRANCISCO, JUNE 13-17, 1938

HOUSE OF DELEGATES

First Meeting—Monday Morning, June 13

The House of Delegates convened in the Empire Room of the Hotel Sir Francis Drake and was called to order at 10 a. m. by the Speaker, Dr. N. B. Van Etten.

Preliminary Report of the Reference Committee on Credentials

A preliminary report of the Reference Committee on Credentials was submitted by the chairman, Dr. Deering G. Smith, New Hampshire, who reported that 131 delegates with proper credentials had registered but that the number would be greatly increased before the first session of the House adjourned.

Dr. Smith announced that neither the delegate nor the alternate delegate from Rhode Island was in attendance but that Dr. Roland Hammond, who is the duly elected delegate from the Section on Orthopedic Surgery, had been appointed an alternate delegate from the Rhode Island Medical Society and wished to represent the Rhode Island Medical Society, which would permit the alternate delegate of the Section on Orthopedic Surgery to represent that section. On motion of Dr. Smith, seconded by Dr. A. T. McCormack, Kentucky, and carried, Dr. Roland Hammond was seated as a delegate from the Rhode Island Medical Society.

Adoption of Minutes of Atlantic City Session

It was moved by Dr. A. T. McCormack, Kentucky, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried, that the House dispense with the reading of the minutes of the Atlantic City session.

On motion of Dr. A. T. McCormack, Kentucky, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried, the minutes of the Atlantic City Session were adopted as printed.

Roll Call

Dr. Frederic E. Sondern, New York, moved that the roll call of the House be dispensed with since a number of the delegates had not yet completed their registration. The motion was seconded by Dr. George W. Kosmak, New York, and carried.

Distinguished Service Award

Dr. Arthur W. Booth, Chairman, Board of Trustees, reported that the Committee on Distinguished Service Awards had considered twenty-two names for the Distinguished Service Award of the American Medical Association and had submitted five names to the Board of Trustees. The Board of Trustees, in accordance with Chapter VI, Section 5, of the By-Laws, selected by ballot the following names for presentation to the House in alphabetical order: Simon Flexner of New York, Ludvig Hektoen of Chicago and Rudolph Matas of New Orleans.

The Speaker appointed as tellers for this meeting and for all meetings of the House at this session Drs. Francis F. Borzell, Pennsylvania, Chairman; Gunnar Gundersen, Wisconsin; Felix P. Miller, Texas; John Q. Myers, North Carolina, and Carl F. Vohs, Missouri.

The tellers spread the ballot and the Secretary announced that 136 votes were cast, of which Dr. Rudolph Matas received 75, Dr. Ludvig Hektoen 35 and Dr. Simon Flexner 26.

The speaker declared Dr. Rudolph Matas, who received a majority of the votes cast, to be elected by the House to receive the Distinguished Service Award of the American Medical Association.

Official Delegates from Foreign Countries

The Secretary informed the members of the House that Dr. C. H. Vrooman was attending the annual session of the American Medical Association as official delegate of the Canadian Medical Association and that Dr. Charles M. Greenslade would represent the New Zealand branch of the British Medical Association, both of whom would appear before the House later.

Messages of Sympathy

On motion of Dr. J. E. Paullin, Section on Practice of Medicine, seconded by Dr. H. B. Everett, Tennessee, and carried, a message expressing the sympathy and good wishes of the members of the House of Delegates was sent to Dr. Howard Morrow, San Francisco, Chairman of the Local Committee on Arrangements, who was seriously ill.

Dr. A. T. McCormack, Kentucky, moved that the House by a rising vote request the Secretary to send to Dr. E. H. Cary, Texas, who could not attend the session because of illness, its love and congratulations on his progress toward recovery and its regret because of his absence. The motion was seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried unanimously.

Address of the Speaker, Dr. N. B. Van Etten

The Vice Speaker, Dr. H. H. Shoulders, Tennessee, presided while the Speaker, Dr. N. B. Van Etten, read his address, which was referred to the Reference Committee on Reports of Officers:

Members of the House of Delegates:

Centuries ago, in the days of Aesop, an elephant crashing through the woods broke down a small tree in which a bird was sitting on a nest, hovering her young. The mother bird was fatally injured. The elephant was very sorry and apologized in his best manner. The bird with her last expiration begged him to take care of her babies. This the elephant promised faithfully to do and, recalling what he had seen birds do in such an emergency, he carefully turned round and round and sat down on the nest.

Of course the elephant made a mess of it, which is what most of us do when we attempt something for which we have no aptitude or education. It may be presumed that the elephant knew the elephant business very well, but when he tried the bird business he was a little heavy in his technic.

As members of a great organization do we know our business? Are we properly mixing our sociology with our medicine? Are we really altruistic or are we dominated by a mass of individual economic desires? Are we "money mad doctors," as we are advertised on the cover of a June magazine? Are we thinking individually or collectively? Are we so interested in the science of medicine that we are losing a human interest in its application? Do we want more or better medical schools? Do we want more or better educated physicians? Do we want medical education controlled by organized medicine or by government bureaus? Do we, or do we not, correctly interpret the opinions of the medical profession of the United States? Are we so conservative that we are insensitive to social currents?

These questions are inspired by current criticism.

"Organized medicine is doomed," says one, unless it is "democratized." Notice has been given that we are to be investigated, excoriated, flagellated and perhaps excommunicated. It seems obvious that all this shooting is inspired. Why and by whom? Have we definitely departed from democracy? The American Medical Association was created for the

protection of the public from the misrepresentations of charlatans and quacks, for the promotion of the science and art of medicine and for the betterment of the public health. Are we carrying on in the spirit of the founders?

The American Medical Association is the largest medical organization in the world. Its technical setup is democratic by any test. Any member, anywhere, at any time may express himself on any subject with the greatest freedom before his county medical society, and if he meets approval there his opinions may travel to the larger audience of his state medical society and then to this House of Delegates for decisive action.

Evolutionary changes are inevitable, but representing, as you do, all of our states and territories, these changes are not likely to be revolutionary responses to the excitement of occasional individuals among our more than 109,000 members, or servile responses to inspired propaganda. When county societies become interested in new medical service plans and transmit their ideas to state societies, which in turn send them to your sessions, you will discuss them as you have always done, and when a majority of you approve them they will be adopted and carried out by your executives.

By constitutional provision "The legislative powers of the Association reside in the House of Delegates. The House of Delegates shall transact all business of the Association, not otherwise specifically provided for in this Constitution and By-Laws, and shall elect the general officers."

You elect the officers and trustees and they report to you. They do not originate policy. You make the policies, and the officers and trustees are obligated to execute them. If your policies are not carried out to your satisfaction, you may replace your officers. On your shoulders rests the fate of American medicine. Every practitioner of medicine looks to you, and back of these practitioners are millions of people who are daily looking for the best in medical care, not merely adequate care of just any medical care that may be promised by paternalistic bureaus, but a constantly improving medical care that a constantly improving medical profession may offer them.

There can be no autocracy where final decisions rest within a house composed of 175 delegates. There is no dictator among your officers. There is no dictator among the trustees to whom you delegate the care of your money. There is no policy which you may not reverse. You have the power and you have the responsibility. As delegates from constituent bodies it is your duty to report the action of this house to your membership. Judging from the lack of knowledge of the Association among physicians, and judging from the amount of misrepresentation about the American Medical Association which constantly appears in public print, it seems evident that you do not sufficiently exercise intelligent interpretation of the Association to your members at home.

If this great Association is a blundering elephant, remember that you are riding him.

If this great Association is unresponsive to the will of its membership, remember that you may have failed to bring the thought of your constituents to this forum. This is a great association. The Scientific Assembly became so large that you divided it into sixteen sections, where every specialty may be discussed in the best possible manner and where there is ample opportunity for the voice of modern medicine. Other medical societies employ different techniques. It is within your province to develop other models if you wish. Your Judicial Council, your Council on Medical Education and Hospitals and your Council on Scientific Assembly are standing committees of the Association and they report to you.

A delegate raises the objection that the sessions of the House are too short to digest properly questions which arise from resolutions that are presented, and that hasty judgments are likely to result. Your councils meet throughout the year. You may appoint special committees to carry on continuous studies as you have done in the past, and finally you may call special sessions to meet a serious need.

You are amply implemented by your Constitution and By-Laws. If you are unhappy about the conduct of the Association you have only yourselves to blame. Your Speaker makes no recommendations. He has restated your powers to renew your consciousness of them and to stimulate their faithful exercise.

Your Speaker is gratefully appreciative of the unvarying courtesy of this legislature and as the time has come for him

to retire from official places he does so with sincere regret that he will miss his contacts with you. He has faith in the success of the medical profession in riding out disgruntled criticism, and he believes that the general sanity of the American people will lead them to support an honest medical service such as is offered by the American Medical Association.

NEW MEMBERS

Twenty-two delegates are here for the first time. In order that they may be properly identified, I will ask them to rise and remain standing while all their names are called:

Arkansas, Edward E. Barlow; California, J. P. Nuttall; Delaware, William H. Speer; Illinois, R. K. Packard; Indiana, George R. Dillinger; Iowa, A. D. Woods; Massachusetts, Edward L. Merritt, David D. Scammiell, Dwight O'Hara, Walter G. Phippen; Michigan, L. G. Christian; Missouri, H. L. Kerr; Nebraska, Karl S. J. Hohlen; New Jersey, Andrew F. McBride, S. T. Snedecor; New York, Robert F. Barber, James M. Flynn, James R. Reuling Jr., Louis H. Bauer, George F. Newton; Ohio, John B. Alcorn; Vermont, B. F. Cook; West Virginia, Ivan Fawcett; Philippine Islands, Henry W. Daine; United States Army, Roger Brooke; Section on Preventive and Industrial Medicine and Public Health, R. R. Sayers.

I desire to give you a hearty welcome and an assurance that you will be recognized when you rise and that your communications will have a hearing. In common with all the members of this house, you are instructed to follow your resolutions to the sessions of the reference committees. All reference committees will meet immediately after the close of this session for organization, and all delegates are assured that the committee rooms will be open for free discussion of all referred matters.

Since the last session at Atlantic City, in June 1937, many former officers or members of the House of Delegates have gone beyond our vision. The reading of their names will awaken personal memories. The dates following their names indicate their years of service.

A. H. Barkley, Kentucky, 1914.
Walter J. Barlow, California, First Vice President, 1911.
L. G. Bowers, Ohio, 1926.
Walter V. Brem, California, 1923.
E. D. Clark, Indiana, 1907.
Blase Cole, New Jersey, 1937.
Elmer B. Cooley, Illinois, 1918.
Rufus J. Coultas, Illinois, 1912-1913, 1918-1920.
William E. Darnall, New Jersey, Fourth Vice President, 1914.
John P. De Witt, Ohio, 1923-1937.
L. C. Feemster, Mississippi, 1915.
Willard D. Haines, Ohio, 1921-1924.
J. N. Jenne, Vermont, 1908, 1910, 1929.
Daniel Fiske Jones, Massachusetts, 1921.
William H. Kennedy, Indiana, 1926.
Samuel E. Lambert, Washington, 1920-1921.
Edgar J. March, Ohio, 1911-1912.
A. C. Messenger, Ohio, 1924.
W. W. Lazarus, Pennsylvania, 1932.
Henri P. Linsz, West Virginia, 1918, 1920-1930.
Theodore P. Livingston, Nebraska, 1909.
F. A. Long, Nebraska, 1907-1908, 1911.
J. Curtis Lyter, Missouri, 1922, 1934-1925.
Walter J. Miller, Tennessee, 1903, 1905-1906.
William L. Noble, Illinois, 1912, 1914-1915.
Guy S. Peterkin, Washington, 1909, 1915.
William M. Robertson, Pennsylvania, 1916.
Dunbar Roy, Georgia, 1910-1911, 1914.
Samuel Wolfe, Pennsylvania, 1907-1910.
George H. Scott, U. S. Army, 1933.
George L. Strader, Wyoming, 1908.
Harry V. Wurdemann, Washington, 1902, 1906, 1914.
George H. Simmons, Chicago, Secretary, 1900-1911; Editor, 1903-1911; Editor and General Manager, 1911-1924; Editor and General Manager Emeritus, 1924-1937.

Dr. Simmons attended the sessions of the House last June and was present at the delegates dinner. He exhibited much of his old enthusiasm for the Association, for the success of which he was largely responsible. His sanity and loyalty are needed today. He will be long remembered.

As life runs on, the road grows strange
With faces new, and near the end
The milestones into headstones change
'Neath every one a friend.

—James Russell Lowell

At the request of the Vice Speaker, the members of the House rose and stood for one minute in silent tribute to the memory of departed delegates.

Reference Committees

The Speaker presented the following names of members of Reference Committees:

SECTIONS AND SECTION WORK

Robert A. Peers, Chairman.....California
Arthur J. Bedell.....Section on Ophthalmology
Burt R. Shurly.....Section on Laryngology, Otology and Rhinology
Edward H. Skinner.....Section on Radiology
Tom B. Throckmorton.....Section on Nervous and Mental Diseases

RULES AND ORDER OF BUSINESS

W. H. Seemann, Chairman.....Louisiana
Lewis B. Bates.....Isthmian Canal Zone
Edgar A. Hines.....South Carolina
J. Newton Hunshberger.....Pennsylvania
Roland Hammond.....Rhode Island

MEDICAL EDUCATION

William D. Johnson, Chairman.....New York
John W. Ames.....Colorado
J. C. Flippin.....Virginia
McLain Rogers.....Oklahoma
Walter E. Vest.....West Virginia

LEGISLATION AND PUBLIC RELATIONS

Terry M. Townsend, Chairman.....New York
W. Albert Cook.....Oklahoma
Charles A. Dukes.....California
Henry Cook Macatee.....District of Columbia
Walter B. Martin.....Virginia

HYGIENE AND PUBLIC HEALTH

H. B. Everett, Chairman.....Tennessee
Charles H. Goodrich.....New York
J. F. Hassig.....Kansas
Charles S. Skaggs.....Illinois
Joseph F. Smith.....Wisconsin

AMENDMENTS TO CONSTITUTION AND BY-LAWS

H. A. Luce, Chairman.....Michigan
Herbert L. Bryans.....Florida
George P. Johnston.....Wyoming
Charles J. Whalen.....Illinois
Raymond L. Zech.....Washington

REPORTS OF OFFICERS

J. N. Baker, Chairman.....Alabama
Elbridge J. Best.....California
Ben R. McClellan.....Ohio
Richard H. Miller.....Massachusetts
Arthur C. Morgan.....Pennsylvania

REPORTS OF BOARD OF TRUSTEES AND SECRETARY

Frederic E. Sondern, Chairman.....New York
Clyde L. Cummer.....Section on Dermatology and Syphilology
John H. Fitzgibbon.....Oregon
Fred W. Rankin.....Section on Surgery, General and Abdominal
Felix J. Underwood.....Mississippi

CREDENTIALS

Deering G. Smith, Chairman.....New Hampshire
R. W. Fouts.....Nebraska
James R. McVay.....Missouri
William H. Myers.....Georgia
William R. Molony Sr.....California

MISCELLANEOUS BUSINESS

Fred Moore, Chairman.....Iowa
E. S. Hamilton.....Illinois
Walt P. Conaway.....New Jersey
F. S. Crockett.....Indiana
E. L. Henderson.....Kentucky

On motion of Dr. A. T. McCormack, Kentucky, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, the House consented to the appointment of a Reference Committee on Executive Session.

EXECUTIVE SESSION

J. D. Brook, Chairman.....Michigan
W. F. Braasch.....Minnesota
William R. Brooksher.....Arkansas
Don F. Cameron.....Indiana
Meredith Mallory.....Florida

SERGEANTS AT ARMS

Holman Taylor.....Texas
Howard C. Frontz.....Pennsylvania

Address of President J. H. J. Upham

The Speaker resumed the Chair and presented the President, Dr. J. H. J. Upham, Columbus, Ohio, who delivered the following address, which was referred to the Reference Committee on Reports of Officers:

Mr. Speaker and Members of the House of Delegates:

The opportunity of visiting many state and district medical society meetings in practically all sections of the country has given me three outstanding impressions concerning the state of medicine and medical organization in this country:

First is the evident desire, even avidity, of the general membership of the medical profession for self improvement in the newer developments of medical knowledge. This is evidenced by the great number of medical societies at present in existence providing programs to meet all varieties of medical practice. There are at the latest listing 100 national special societies holding yearly meetings. In addition there are numerous district meetings of similar character, to meet the demands of sectional areas. These are purely scientific assemblies, and the opinions and expressions of the members attending have a weight and authority that are duly acknowledged if confined within the bounds of medical science.

When, however, such societies take action on matters of medical policy, or officers of these organizations seize the opportunity to attract public notice by expressing personal opinions outside the real scope of the society, they collectively or individually arrogate to themselves an authority and importance that cannot be conceded by the rest of the medical profession—echoes from the public press to the contrary notwithstanding!

Added to these special societies are the regular state and county meetings, the hospital staff gatherings, the growing practice of postgraduate assemblies for the alumni of many colleges, and the postgraduate courses carried on by several state associations. One cannot but wonder whether this activity is not being somewhat overdone, and yet from a questionnaire sent to cross section areas the attendance of members reported was remarkably good and a review of a large number of programs shows a catering to a high plane of medical thought. One must feel therefore that the supply is in response to a definite and a general demand.

A second impression is of the awakened interest of our membership in the present social and economic questions confronting the country as a whole and especially those connected with present day medical practice. Ten years ago the average practitioner accepted the care of the indigent as a professional duty and an accepted duty. The great depression, however, made this burden too great to be carried further by our profession alone and forced collective thinking of ways and means of meeting the situation. In every state and in almost every county the various phases of this problem are being discussed. The best thought of our members is being given to meeting the difficulties in their respective areas. Furthermore, it is my distinct feeling that the activities manifested are not the result of fear of the imposition of any European scheme of socialized practice but rather an aroused consciousness of the part organized medicine should play in seeking to solve the present economic problems in relation to illness. Allied to this is the manifest determination to preserve the individual type of medical practice as that best suited to this country, and to maintain that practice on the highest possible plane.

In the current effort to secure definite and countrywide information as to needs of medical care and the supply at present existing in every community, the American Medical Association has assumed a leadership in constructive thought that is a noteworthy contribution. When the basic facts are established a long step will have been taken in the direction of solving some of these many grave problems. One concrete evidence of this arousing of the members of our profession, and in their feeling that our greatest hopes lie in a united profession, is the remarkable increase in membership of this Association. The latest report shows 109,435 actual members. This is our emphatic response to the press reports of dissection in our organization.

The third impression is that of the awakening of our membership to the obligations of medicine and medical practice. The scientific investigations of fifty years ago laid the foundation of preventive medicine. The record of progress made in these fifty years is one of wonderful achievement. It has led to the grouping of physicians into those occupied chiefly in scientific research, those engaged in public health work or preventive medicine, and the remainder in curative practice.

The developments of recent years have shown that social and economic conditions are inseparably intermingled with health and sickness. There are factors beyond the ability of physicians alone to supply that enter into many present day problems. This was first shown on a large scale in the nine-

ties as a result of the worldwide interest in tuberculosis following the discovery by Koch of tuberculin. Before that time tuberculosis was practically relegated to the medical profession, but with the focusing of attention on this, the then greatest single destroyer, there developed the need of improved sanitation, protection of the workers in industry, the providing of opportunity for prolonged periods of complete rest, proper nourishment and particularly the education of the public, especially of those in contact with the disease. The enlistment of intelligent and interested members of the public in cooperation with members of our profession has led to gratifying results in forty years and this must be continued for many years to come.

Following this lead we have seen similar campaigns against cancer, heart disease, maternal and child welfare, and lastly the recently inaugurated campaign against syphilis. These movements are the result of an aroused public interest. They are an inevitable product of modern civilization, and the medical profession cannot stand aloof. It is of great importance that organized medicine take cognizance of these movements, not necessarily officially, but through physician members with the medical point of view to guide these organizations along the lines of procedure most advantageous to the actual and prospective individuals affected and for the public as a whole.

This fight against syphilis parallels that of tuberculosis in many ways, especially in the need of popular education and the stressing of the value of prolonged treatment. Particularly in these fields is wisely directed public effort of value. In the campaign against syphilis there are certain advantages over that against tuberculosis, in that syphilis is not so disabling in the early stages, does not require sanatorium treatment and is not connected with industrial hazards or insanitary living conditions. It is, however, so dependent on fundamental human frailty that it is almost equally difficult to control.

While we possess a specific cure for syphilis if adequate treatment is given, it is beyond the power of the medical profession to meet the demand alone. The present agitation is a definite challenge to our profession which must be met squarely. Through cooperation with lay efforts, popular education may be wisely directed and efficiently carried on. The tabu of silence has already been broken, and early and prolonged treatment is being stressed by both lay and medical workers. This is of great importance but after all is but preliminary or auxiliary to the real task of treatment, which is definitely our field and our responsibility. One might think superficially that this is the major concern of the syphilologists and genito-urinary specialists, but the number of individuals affected is so great and their distribution so wide, many living in rural areas not accessible to specialists, that the general practitioner must play an important part in the program.

The necessary expense of prolonged treatment is also a factor which makes this necessary. As is usually the case, the extremes of society, the high and the low, are not affected. The upper classes can take care of the costs of specialists, and the indigent are being cared for, partially at least, by dispensaries or clinics, with many of the state or local boards of health supplying the necessary drugs. In areas not at present supplied, this could be supplemented by plans worked out by representatives of the county medical society, the local board of health and the community fund or other social agency to form a joint governing body to open treatment centers, the medical group to furnish the medical personnel and be responsible for the treatment, the health board to furnish the drugs and supplies and the social agency to investigate the social status of the clientele and carry on follow-up work.

The middle class in general may be cared for effectively by the general practitioner, but the lower middle class and those on the borderline of medical indigence constitute a serious phase of the problem. Many refuse to go to a free clinic but are deterred from seeking adequate treatment because of the expense. Some of these patronize quick-cure charlatans or buy worthless quack remedies. In view of the greatly simplified modern technic our medical societies in many places are meeting this issue by mutual agreement of the members to charge these individuals fees commensurate with their circumstances, particularly remembering the long period required for adequate treatment. A plan might be drawn by the com-

posite governing body I have mentioned that would include the furnishing of drugs and supplies for those reluctant to go to a free clinic but able to pay a small fee for the actual service of the physician. In this way the self respect of these patients may be preserved and many saved the devastating effects of ineffectual or practically worthless treatment.

In view of the wide publicity given the antisiphilic movement and the necessary part in it that the medical profession must play, the attention of the state and county societies should be drawn to the opportunity of assuming a definite leadership in the respective states and counties, and of directing the movement with the best ideals of medicine and for the best interests of the public.

Address of President-Elect Irvin Abell

The Speaker presented the President-Elect, Dr. Irvin Abell, Louisville, Ky., who delivered the following address, which was referred to the Reference Committee on Reports of Officers:

Mr. Speaker and Members of the House of Delegates:

As your President-Elect it has been my duty and my privilege to attend the deliberations of your Board of Trustees and many of the district and state association meetings throughout the country. The most lasting impression I have gained from these widespread contacts is the sincere desire of the members of the American Medical Association to preserve our system of medical care and at the same time to make its benefits available to all classes of our population. Differences of opinion there have been and will continue to be as to the best method of accomplishing the latter aim, but I have found nowhere basis for the unwarranted accusation that organized medicine as a whole is static and obstructive. True it has opposed, does now oppose and will continue to oppose proposals that tend to lower the standard which it has set on medical service; namely, that it be good medical service. By no possible deduction can this be interpreted as a selfish action, one that would inure to our own aggrandizement. By tradition and heritage we are committed to the principle that the sole reason for the existence of our profession is the service it can render humanity. The highest service it can render the people of this country consists not only in healing the sick and preventing disease but in preserving that system of practice, evolved through years of studious and unselfish effort, which has given to the people of the United States the lowest morbidity and mortality rates of any country in the world.

The members of the Association have welcomed with enthusiasm the resolutions adopted by the Board of Trustees following a meeting in which representatives of the American Public Health Association and the United States Public Health Service participated. They see in this an opportunity to continue the constructive service of organized medicine to the people in solving the problem of a wider distribution of medical service without sacrificing or compromising the principles and precepts which are recognized as essential to good medical care. While our critics have rather vociferously demanded a plan, our membership, with a better understanding, an accumulated knowledge and a broader experience bearing on the problem than any other interested body, has wisely refrained from making a "snap diagnosis" with its inevitable inaccurate "therapeusis" until the needs for medical care and preventive medicine can be precisely known.

In any consideration of the indigent and the low income groups, social and economic factors play parts of equal importance with medical care. It is essential that the reciprocal relations of each be given careful consideration, to the end that medical and professional standards do not suffer as a result of projected experiments in legislative planning for socialization in various fields. The medical profession, from prolonged and intimate observation, is fully cognizant of the social and economic needs that lie so heavily on the indigent and the low income groups. While willing to do its share in their rehabilitation, the medical profession does not feel it within its power or province to initiate or sponsor measures looking toward social and economic reformation. At the same time it resists efforts and proposals that would include and regiment its services under lay control to the accomplishment of these ends.

There is no definite means of computing in monetary valuation the services voluntarily rendered to the indigent and low income groups by the medical profession during the past eight years. From such data as are available a fair estimate based on a minimum fee schedule would place the valuation in the neighborhood of a million dollars a day, a contribution not equaled or exceeded by any agency other than the federal government.

Surely this offering for the public good would indicate that medicine has more than fulfilled the obligation implied in its Principles of Medical Ethics to give of its services to the needy and that as a profession our ideal and our aim have been the provision of service rather than solicitation for compensation. The fact that the requirement and demands of the indigent and low income groups have reached such proportions as to constitute a load beyond the capacity of the profession to absorb and carry has brought to the fore the proposal that these needs be met by the application of federal funds. If such a change is to come, it is essential both for the future progress of medicine and for the welfare of the groups to be served that the distribution and direction of such funds be made neither under political control nor under lay domination. The health of the nation should neither be made the football of politics nor consigned to the fallacious judgment of those who, regardless of their sincerity of purpose, are untrained in the intricacies of its care. With accurate knowledge concerning the variations in the availability of medical service and in the facilities for its dispensation and as well in the demands for such in every county in the country, it will be possible for the Association to evolve methods that will make possible the provision of care to those unable to provide it themselves.

The economic level in the states and counties ranges all the way from opulence to poverty; many are abundantly able financially to meet their obligations to society, including the care of their indigent; some are apparently so poor that they are unable to meet the expense of their local governmental activities. The problem of medical care in the former group does not present the complexities found in the latter, and, while the provision of medical care to it will meet a humanitarian impulse, it will not alone solve its problems.

It is difficult for us to understand the attitude of the socially minded statesmen who would supply this group with medical care at governmental expense with a lowering of the efficiency, and perchance integrity, of a part of the medical profession and without providing for the beneficiaries a standard of living that would maintain their own respect as free American citizens. The American people are not willing to accept a collectivist or communal society. There are assuredly no good grounds to assume their volition to subject the medical profession to such an experiment. When the suggestions of this House of Delegates based on the study undertaken by the Association will have been presented to the public, the thoughtful will have concrete evidence that we have not been recreant to the faith reposed in us but that with a fortitude developed from the accomplishments of the past we stand ready to salute a more splendid future.

A second matter of widespread interest concerns graduate education, a problem that fortunately is well under way to solution under the direction of the Council on Medical Education and Hospitals, its objective being to improve the qualifications of physicians and thereby to enhance the quality of medical service. The growth and development of knowledge in the art and science of medicine during the present century have been unprecedented: its accumulation has been so rapid and so extensive as to upset all previous conceptions as to both the acquisition and its distribution. Not only is the recent graduate perplexed in preparing himself for a career in medicine, but the graduate of some years who has not kept abreast of the current finds himself woefully lacking in the newer knowledge and procedures, with a consequent failure in understanding of their principles, application and usefulness. The American Medical Association, in consonance with its aim of maintaining a high standard in medical practice, has always insisted that the quality of medical care be good. To be good it must embrace and utilize the constantly accumulating fund of knowledge accruing from study, from research, from clinical

investigation and from scientific evaluation of all that is proposed for its advancement. The newer knowledge, thoughts and concepts meeting these requirements are so great that graduate medical education has forged to the front as one of the important problems confronting the profession today. It presents two phases, one dealing with the preparation and training of specialists, the other dealing with the continued education of those who are not specialists. Because of the enormous elaboration of the details of medicine, as of other sciences, there has been a corresponding growth of specialism in medicine and in research. Twelve examining boards have been created for the certification of specialists in their respective fields, which demand of the candidate requisite training and a demonstration of efficiency before the stamp of approval as specialist, attesting the attainment of skill and knowledge, may be obtained. Medical schools and hospitals are utilized in the graduate training of specialists, while the schools, the hospitals and the state medical associations cooperate in providing opportunities for the further training of those who are not specialists. The entire problem of graduate education is at present being made the subject of intensive study by the Council on Medical Education and Hospitals with the objectives of developing opportunities for its acquirement, establishing criteria for the schools and hospitals engaging in it, and formulating programs and courses of study for those desiring to take advantage of it.

The scientific trends of American medicine, as evaluated by the contributions of the past year made in the component units of the American Medical Association and in its literature, can be viewed with optimism. Remarkable advances and progress are being charted in every field, but the words of Dr. George Shattuck, uttered as far back as 1866, still hold true: "No one can deny or doubt that we have made and are making great advances, but the horizon opens before us as we go on, and the extent of the field becomes even more apparent than our progress."

REPORTS OF OFFICERS

Report of the Secretary

Dr. Olin West presented his report as Secretary, which was referred to the Reference Committee on Reports of Board of Trustees and Secretary, with the exception of that portion dealing with proposed amendments to the Constitution, which was referred to the Reference Committee on Amendments to the Constitution and By-Laws.

Report of Board of Trustees

Dr. Arthur W. Booth, Chairman, presented the report of the Board of Trustees, which was referred to the Reference Committee on Reports of Board of Trustees and Secretary, except those portions referring to the Bureau of Legal Medicine and Legislation and to the Bureau of Medical Economics, which were referred to the Reference Committee on Legislation and Public Relations, and that portion referring to contraceptive devices, which was referred to the Reference Committee on Executive Session.

In addition to the report of the Board of Trustees as printed in the Handbook, Dr. Arthur W. Booth, Chairman of the Board of Trustees, presented the following supplementary report:

REQUESTS FROM THE AMERICAN RED CROSS FOR APPROVAL OF ITS MEDICAL POLICIES IN DISASTER

The following statement of the medical policies of the American Red Cross in disaster was submitted to the Board of Trustees by the medical adviser, William De Kleine, with a request for approval by the Association and is referred to the House of Delegates for its consideration:

SECTION VII. MEDICAL AND NURSING SERVICE: I. POLICIES

The primary responsibility for the care of the sick and injured in disasters rests with the local physicians. Red Cross medical service does not substitute for the services of local physicians and dentists but cooperates with them and assists by organizing and directing the medical relief work and by providing the facilities which they lack and need for the emergency.

Every effort is made to maintain, and reestablish as quickly as possible, the predisaster relationships between physicians and dentists and their patients. In the first few days it is often necessary to apply aid on a mass basis in emergency medical stations. This practice is discontinued as soon as possible and patients referred to their own physicians and dentists.

Red Cross medical and dental assistance is intended only for those who are ill or injured because of the disaster and who because of lack of resources are unable to obtain care. Exceptions may be made in certain emergencies (obstetrics, for example) when medical service is not otherwise available.

If possible, the Red Cross medical officer after completing his first survey, otherwise the director, should confer with local physicians, dentists and hospital officials, preferably through the local medical and dental societies, to explain Red Cross medical policies and procedures.

It is hoped that physicians and dentists, like other community leaders engaged in various phases of disaster relief work, will give their services on a volunteer basis for patients unable to pay. On approval of the director, actual expenses incurred and cost of supplies used by physicians and dentists may be paid those volunteering their services. Physicians should not be paid for work during the emergency period unless they have been previously employed for that purpose. The Red Cross recognizes that this schedule of fees is merely an attempt to share the burden resting on the medical and dental professions and does not fully compensate on the basis of all professional schedules. Where volunteer service is not available or compensation is desirable, the fees allowed should not exceed the amounts indicated in the following paragraphs without prior approval of the vice chairman.

If physicians or dentists are needed for either part or full time duty at emergency medical stations, emergency hospitals, concentration centers, for assisting health officials in immunization work or making home visits on a mass basis, they may be employed at not to exceed \$10 per day for full time and proportionately smaller amounts for part time duty. If employed on an hourly basis (one to three hours only) the rate should not exceed \$2.50 per hour. An additional amount of 5 cents per mile may be allowed if they use their automobiles for transportation.

Arrangements for medical and dental services on an individual patient basis may be authorized following the usual Red Cross disaster case work processes.

If physicians not employed on a part or full time basis are needed for making home visits, attending obstetric cases or other service, particularly in rural territory, arrangements may be made on an individual patient basis. Arrangements may be made for a limited number of calls per patient at the prevailing local fee, but not to exceed \$3 per visit, plus 25 cents per mile (one way) for calls in rural areas and not to exceed \$20 for attending an obstetric case, including one or two postpartum visits, plus 25 cents per mile (one way) for each call in rural areas. No mileage allowance shall be made for visits within the corporate limits of a city or village where the physician resides.

Glasses may be fitted, dental plates made and laboratory service and x-ray examinations obtained at the prevailing local rate. When a considerable number of x-ray examinations are required, a reasonable reduction is desirable.

One to two dollars per visit may be allowed for a limited number of office visits, and three to five dollars for a physical examination.

A surgical fee should not exceed \$50 except in very highly specialized fields such as orthopedic and plastic surgery, or in unusually severe injuries requiring a long period of treatment.

When the illness or injury of a disaster patient is complicated with a preexisting disease such as a venereal disease, allowance may be made for the purchase of medical supplies sufficient for a limited course of treatment to insure his prompt recovery or to make him noninfectious.

Occasionally when a disaster causes a large number of mutilating injuries and the care of disaster patients interferes extensively with the regular practice of physicians, compensation may be on the basis of a lump sum honorarium for all patients

regardless of their number or the duration of their illnesses. Any such arrangement must have the prior approval of the vice chairman.

With the approval of the director, the medical officer or his representative will plan and arrange for professional compensation.

Reasonable hospital rates may be paid for the care of patients including ordinary service, medicines, dressings, operating room, etc. (for disaster caused illnesses or injuries), on a case work basis. Ward rates are generally considered reasonable. Commitments should not be made until they have been approved by the director. Verbal agreements between hospitals and the Red Cross will be given written confirmation by the director.

Authorization to physicians to write prescriptions for disaster patients should be granted only on an individual case basis. Druggists should be informed of this policy and instructed to fill prescriptions as a charge against the Red Cross only when each prescription is accompanied by a disbursing order.

Report of the Judicial Council

Dr. George Edward Follansbee, Chairman, presented the report of the Judicial Council, which was referred to the Reference Committee on Amendments to the Constitution and By-Laws.

Report of the Council on Medical Education and Hospitals

Dr. Ray Lyman Wilbur, Chairman of the Council, presented the report of the Council on Medical Education and Hospitals, together with supplementary reports, which was referred to the Reference Committee on Medical Education:

SUPPLEMENTARY REPORT: ESSENTIALS OF AN ACCEPTABLE MEDICAL SCHOOL

I. ORGANIZATION

A medical school should be incorporated as a nonprofit institution. Its board of trustees should be composed of public spirited men or women having no financial interest in the operations of the school or its associated hospitals. The trustees should serve for fairly long and overlapping terms. If the choice of trustees is vested in any other body than the board itself, that fact should be clearly stated. Officers and faculty of the school should be appointed by the board.

II. ADMINISTRATION

There should be careful and intelligent supervision of the entire school by the dean or other executive officer who, by training and experience, is fitted to interpret the prevailing standards in medical education and who is clothed with sufficient authority to carry them into effect.

There should be a good system of records showing conveniently and in detail the credentials, attendance, grades and accounts of the students, by means of which an exact knowledge can be obtained regarding each student's work. Records should also be kept showing readily the attendance of students at the teaching hospitals and dispensaries and the maternity and post mortem cases attended.

The school should require that students be in actual attendance within the first week of each annual session and thereafter. Except for good cause, such as for illness, no credit should be given for any course when the attendance has been less than 80 per cent of the full time.

The school should issue, at least annually, a bulletin setting forth the character of the work which it offers. Such announcement should contain a list of the members of the faculty with their respective qualifications. The courses available should be set forth by departments (anatomy, physiology and so on) showing for each course its number, subject, content, character (lecture, recitation, laboratory or clinic), length of time, when, where and by whom given, and the amount of credit allowed. Information should be given regarding entrance requirements and tuition fees. The names of the students enrolled during the current or previous sessions should also be included.

The number of students to whom an adequate medical education can be given by a college is related approximately to the laboratory and hospital facilities available and to the size and qualifications of the teaching staff. A close personal contact

between students and members of the teaching staff results in an efficiency which is not possible in an institution where the number of students is excessive.

Advanced standing may be granted to students for work done in other acceptable medical schools, and in granting advanced standing there should be no discrimination against the school's full course students. Official verification of the student's previous medical work should be obtained by direct correspondence with the school from which he comes, and his preliminary qualifications should also be verified and recorded the same as for freshmen students.

The admission of students to the medical school must be in the hands of a responsible committee or examiner, whose records shall always be open for inspection. Documentary evidence of the student's preliminary education should be obtained and kept on file. When the medical school is an integral part of the university, this work usually devolves on the university examiner. Unless the university examiner and his records are closely accessible, however, some officer at the medical school should obtain and keep on file each student's academic records.

III. FACULTY

The school should have a competent teaching staff, graded and organized by departments. Appointments should be based on thorough training, successful teaching experience, ability in research, and willingness to pursue an academic career. In the clinical departments this does not exclude men who are in the active practice of medicine and surgery. Nominations for faculty positions should originate in the faculty, usually being made by the dean in consultation with the department heads or a committee of the faculty. Reasonable security of tenure must be assured in order that the personnel of the faculty may have adequate stability. In the preclinical sciences the faculty should include at least ten qualified persons of professorial rank,¹ devoting their entire time to teaching and to that research without which they cannot well keep up with the rapid progress of medical science. For each twenty-five students in a class there should be at least one full time assistant in each of the preclinical departments. Salaries should be sufficient to enable members of the faculty to support themselves and their families without the necessity of devoting time and energy to other occupations.

IV. PLANT

The school should own, or enjoy the assured use of, modern fireproof buildings sufficient in size to provide lecture rooms, class laboratories, small laboratories for the members of the teaching staff and advanced students, administrative offices and a medical library. Equipment should be adequate, both for student use and for research. A trained librarian should be employed to supervise the operation and development of the library, which should include the more modern text and reference books with the *Quarterly Cumulative Index Medicus*, the *Index Catalogue of the Library of the Surgeon-General's Office* and serviceable card indexes. The library should receive regularly the leading medical periodicals, the current numbers of which should be readily accessible. These periodicals should be bound without delay.

There should be provision for the collection, preservation and indexing of anatomic, embryologic, pathologic and other specimens. With each pathologic specimen coming from post-mortems there should also be kept the record of the postmortem, the clinical history of the patient on whom the necropsy was held, and microscopic slides showing the minute structure of the disease shown in the gross specimen. The museum furnishes an excellent means of correlating the work of the department of pathology with that of the clinical departments.

There should be sufficient dissecting material to enable each student to dissect at least the lateral half of the human cadaver, to provide cross sections and other material for study and demonstration.

For experimental laboratory work, as well as for medical research, a supply of animals is essential. Proper provision is necessary also for the housing and care of such animals. In any use made of animals every precaution should be taken to prevent suffering, and work by students should be carefully supervised.

1. Professorial rank as here used includes professors, associate professors and assistant professors.

Each school should have such useful auxiliary apparatus as stereopticons, reflectoscopes, microprojectors, carefully prepared charts, embryologic or other models, manikins, dummies for use in bandaging, x-ray apparatus, and other aids to effective teaching.

V. CLINICAL FACILITIES

The school may own or control a general hospital. By control is meant the unquestioned right to appoint the attending staff. In this event the students come into close and extended contact with patients under adequate supervision. In the event that a medical school depends for clinical teaching on an independent hospital, it is essential that the clinical teachers, either on nomination by the school or by agreement in conference between school and hospital, be appointed by the hospital trustees to appropriate positions on the hospital staff. Such hospitals should be in close proximity to the school and have a daily average of not less than 200 patients who can be utilized for clinical teaching, these patients to be of such character as to permit the students to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties. In the use of this material, bedside and ward clinics should be developed for sections of from five to ten students; and patients in medicine, surgery and the specialties should be assigned to each student under a well supervised clinical clerk system. The treatment and care of these patients should be particularly observed and recorded by the student under the strict supervision of the intern, the resident or the attending staff of the hospital. The use of existing municipal or state hospitals for teaching purposes is also advised.

The school should also own or control ample hospital facilities for children's diseases, contagious diseases and nervous and mental diseases.

The school should own or control a well ordered dispensary or outpatient department with a daily average attendance of at least 100 patients (visits). Good histories and records of the patients should be kept and the material used in medical instruction. The attending staff should be drawn largely from the faculty, including those of highest rank.

At least fifteen maternity cases should be provided for each senior student, who should have actual charge of these cases under the supervision of the clinical instructor. A carefully prepared report of each case should be handed in by the student.

Facilities should be provided for at least fifty necropsies during each school session which are attended and participated in by students. These should be performed by the professor of pathology or a member of his staff. The material thus secured should be used in connection with clinical pathologic conferences.

VI. RESOURCES

Experience has shown that modern medicine cannot be acceptably taught by a school which depends solely on the income from students' fees. No medical school, therefore, should expect to secure approval which does not have a substantial income in addition to students' fees. This statement carries double weight if the school finds it necessary to maintain its own teaching hospital.

VII. REQUIREMENTS FOR ADMISSION

1. The minimum requirement for admission to approved medical schools is two years of college training which include English, theoretic and practical courses in physics, biology, and general and inorganic chemistry. Three years or more in college is, however, recommended.

2. Since it cannot in general be assumed that all who have satisfied these requirements merely in terms of hourly credits are fitted for the study of medicine, it is desirable that qualitative standards for admission should be imposed.

3. As a rule candidates should have received their preliminary education in institutions approved by accrediting agencies acceptable to the Council. Exception to this rule may be made in the case of applicants who have demonstrated superior ability. For the convenience of admitting officers the Council has prepared a list of colleges of arts and sciences approved by national and regional educational associations.

4. Admission to approved medical schools may also be by examination under the following conditions:

(a) Candidates who have completed two years of collegiate instruction and present evidence of general scholarship of high order, but who lack credits in not more than two of the required subjects, may be admitted on passing examinations in these subjects.

(b) Candidates who have completed three years of collegiate instruction and present evidence of having accomplished work of distinction in one or more fields of learning, but who lack credit in any or all of the required subjects, may be admitted on passing examinations in these subjects.

VIII. CURRICULUM

The entire course of four academic years should consist of from 3,600 to 4,400 hours, distributed as from 900 to 1,100 hours a year, and shall be grouped as set forth in the following schedule, each group to be allotted approximately the percentage of hours of the whole number of hours in the courses as stated:

	Number	Per Cent.
1. Anatomy, including embryology and histology..	14	18.5
2. Physiology	4½	6
3. Biochemistry	3½	4.5
4. Pathology, bacteriology and immunology.....	10	13
5. Pharmacology	4	5
6. Hygiene and sanitation.....	3	4
7. General medicine	20	26.5
Neurology and psychiatry		
Pediatrics		
Dermatology and syphilis		
8. General surgery	13	17.5
Orthopedic surgery		
Urology		
Ophthalmology		
Otolaryngology		
Roentgenology		
9. Obstetrics and gynecology.....	4	5
Total	76	100
Electives	24	0

When the teaching conditions demand it, a subject may be transferred from one division to another.

Several of the medical schools now require an internship for graduation. Where it is not obligatory it is strongly urged and graduates should be assisted in securing internships in hospitals approved by the Council on Medical Education and Hospitals of the American Medical Association.

Report of the Council on Scientific Assembly

Dr. James E. Paullin, Chairman, presented the report of the Council on Scientific Assembly, which was referred to the Reference Committee on Sections and Section Work.

Dr. Paullin also presented the following proposed amendment to Section 3, Chapter IX, of the By-Laws, which was referred to the Reference Committee on Amendments to the Constitution and By-Laws:

To amend Chapter IX, Sec. 3 of the By-Laws by adding after paragraph six (6) the following:

"And with the cooperation of the section officers to combine section programs and to arrange such other changes as may seem advisable."

So that when so amended said section will read as follows:

"(6) to arrange the programs for the general meetings of the Scientific Assembly and with the cooperation of the section officers to combine section programs and to arrange such other changes as may seem advisable."

NEW BUSINESS

Resolution on Sulfanilamide

Dr. Burt R. Shurly, Section on Laryngology, Otolaryngology and Rhinology, presented the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

WHEREAS, Sulfanilamide and its allied products have proved of great usefulness in various streptococcal and other infections of the human body; and

WHEREAS, Its use carries with it toxic symptoms and idiosyncrasies which make it dangerous to human life when the user is not guarded by blood counts and by the supervision of persons with understanding of the drug; and

WHEREAS, the dosage of this remedy is of the greatest importance in obtaining proper results; be it

Resolved, That the medical profession condemn the sale of this drug over the counter and its use by the public, except when prescribed by a physician and taken under his observation.

Resolution Requesting Reconsideration by the Council on Foods of Establishment of Suitable Standards for the Acceptance of Butter

Dr. J. Gurney Taylor, Wisconsin, presented the following resolution, which was referred to the Reference Committee on Hygiene and Public Health:

WHEREAS, The American Medical Association, through its duly elected Board of Trustees, representing the medical profession in each of the several states, in 1929 established a Council on Foods, whose purpose was to create suitable standards for the health claims made in food advertising and to protect the public from unsound, unwarranted, false and fraudulent claims for foods; and

WHEREAS, The Council on Foods of the American Medical Association during these several years has made a valuable contribution in protecting the public from unscientific health claims for foods and has, through its efforts, elevated the standards of advertising for the sale of food products of those commodities that have been granted the seal of acceptance; and

WHEREAS, The public has recognized the value of these efforts and has placed the utmost confidence in the decisions and the work of the American Medical Association through its Council on Foods, which now gives the connotation of a standard of value on those foods which bear the seal of acceptance, and the seal has come to indicate to the public that the medical profession has approved that product and that any product so labeled is a valuable adjunct to the diet of the individual; and

WHEREAS, The seal, once granted to certain butter products, was withdrawn by the Council on Foods without prejudice to such products and without any implication that the nutritional value of dairy products was doubtful, recognizing, on the contrary, that butter and dairy products are valuable components of the daily diet, and thus an unintentional injury may have been done the butter and dairy industry by such withdrawal of the seal of acceptance; therefore be it

Resolved, That the Council of the State Medical Society of Wisconsin, through the regularly elected delegates of the society, call this to the attention of the entire House of Delegates of the American Medical Association at its meeting to be held in San Francisco, June 13 to 17 inclusive, requesting the House of Delegates to request the Council on Foods to reconsider suitable standards for the acceptance of butter and the advertising associated therewith.

Resolution on Traveling Hall of Health

Dr. Howard L. Snyder, Kansas, presented the following resolution, which was referred to the Reference Committee on Hygiene and Public Health:

WHEREAS, The successful handling of halls of health and similar exhibits by various state and county medical societies has seemingly demonstrated a vast amount of public interest in activities of this kind; and

WHEREAS, It is believed that visual lay education depicting the progress of modern medicine, the service it is able to offer and the ways and means in which the public may take advantage of that service affords one of the best means for the medical profession to reply to the charges of its present critics; and

WHEREAS, It is further believed that many public agencies, medical schools, boards of health, medical supply concerns and other institutions allied with the practice of medicine would be willing to cooperate with the American Medical Association in the presentation of extensive, efficient and helpful exhibits of this kind; be it therefore

Resolved, That the Kansas Medical Society does hereby suggest and recommend to the American Medical Association that it establish a traveling Hall of Health, including exhibits of all kinds pertaining to public health and the practice of medicine, for display in all parts of the country under cosponsorship with the constituent state associations.

Approved by the House of Delegates of the Kansas Medical Society in annual session on June 12, 1938.

Resolutions Requesting a Study of American Spas

Dr. Carl F. Vohs, Missouri, presented the following resolutions, which were referred to the Reference Committee on Hygiene and Public Health:

WHEREAS, There are some purported spas in America that make exaggerated claims as to their curative properties and that are not conducted on an ethical basis; and

WHEREAS, There is almost a total absence of reliable information on American spas and health resorts; and

WHEREAS, Many American citizens go to European spas when equal or better results might be obtained at American spas with great saving of time, money and inconvenience; therefore be it

Resolved, That this House of Delegates authorize the President of the American Medical Association to appoint a special committee of five to conduct a study of American spas and health resorts to the end that authentic information regarding spas may be available to physicians; and be it further

Resolved, That our delegates be instructed to present this resolution to the House of Delegates of the American Medical Association at the San Francisco session in June 1938.

Recommendations for Establishment of Council on Medical Care

Dr. George Blumer, Connecticut, presented the following recommendations and letter, which were referred to the Board of Trustees:

At a meeting of the House of Delegates of the Connecticut State Medical Society, held June 1, 1938, the following recommendations of the Committee of Twenty on Medical Care were approved and the delegates to the American Medical Association were instructed to present them to the House of Delegates of the American Medical Association at its meeting in San Francisco:

1. That this society request the House of Delegates of the American Medical Association to establish a council of the Association to be composed of individuals especially qualified to deal with the problems of medical care and to be known as the Council on Medical Care.

2. That this society requests the House of Delegates of the American Medical Association to urge that each state medical association appoint a committee on medical care to cooperate with the Council on Medical Care of the American Medical Association and to suggest that each county medical association appoint a committee on medical care to report to and cooperate with the state committee on medical care.

Dr. Blumer also read the following letter in explanation of the recommendations:

June 3, 1938.

Walter R. Steiner, M.D.
646 Asylum Avenue
Hartford, Connecticut
Dear Doctor Steiner:

Your attention is directed to the following resolution passed by the house of delegates of the Connecticut State Medical Society at its annual meeting June 1.

That the Delegates to the American Medical Association be instructed to urge upon the House of Delegates of the American Medical Association the necessity for special qualifications of the members of the proposed Council on Medical Care, and also to urge that this council include representatives from the Bureau of Legal Medicine and Legislation and the Bureau of Medical Economics, and also, as ex officio members, the chairmen of the Council on Medical Education and Hospitals and the Council on Industrial Health and representatives of the United States Public Health Service and the health sections of the United States Department of the Interior.

Copies of this resolution are being sent also to your alternate.

Very truly yours,

CREIGHTON BARKER, M.D.

Resolutions Requesting Council on Foods to Change Its Policy with Respect to the Consideration and Acceptance of Butter

Dr. Fred Moore, Iowa, presented the following resolutions, which were referred to the Reference Committee on Hygiene and Public Health:

WHEREAS, One of the main objectives of the Council on Foods of the American Medical Association is for improvement in the nature of advertising; and

WHEREAS, The Council on Foods has changed its policy and no longer considers and "accepts" butter and other natural dairy products; and

WHEREAS, Since discontinuing its acceptance of butter it has given its seal of acceptance to substitute products such as oleomargarine sold under trade names; and

WHEREAS, This policy of the Council on Foods has encouraged commercial firms to advertise such products as being accepted by the Council on Foods and used and approved by the medical profession at large; and

WHEREAS, This policy of the Council is bringing much criticism on the profession at large from the dairy interests of the country; and

WHEREAS, The medical profession has always advocated the liberal use of natural dairy products in the interest of public health; and

WHEREAS, The profession at large does not want to be held responsible for a policy which discriminates against the natural dairy products in favor of the margarine class of products; he it

Resolved, By the House of Delegates of the American Medical Association, that the Council on Foods be requested to change its policy in such manner as will eliminate this basis for warranted and undesirable criticism of the medical profession and of the American Medical Association; and he it further

Resolved, That the delegates of the Iowa State Medical Society be instructed to present this action to the House of Delegates of the American Medical Association at the annual meeting in San Francisco in June 1938.

Adopted by the house of delegates of the Iowa State Medical Society May 13, 1938.

Proposed Amendments to the By-Laws

Dr. T. R. K. Gruber presented the following proposed amendments to the By-Laws, on instruction from the executive committee of the council of the Michigan State Medical Society, which were referred to the Reference Committee on Amendments to the Constitution and By-Laws:

Insert in Chapter VI, Section 1, of the By-Laws, "except as otherwise hereafter provided for in the By-Laws" after the sentence "All

resolutions or recommendations of the House of Delegates pertaining to the expenditure of money must be approved by the Board of Trustees before the same shall become effective."

Add to Chapter VII, Section 3, of the By-Laws, the following: "(d) Committee on Public Relations."

Add to Chapter VIII, Section 1, of the By-Laws, the following:

"The Committee on Public Relations shall consist of five members each selected for a period of five years by the House of Delegates. The term of office of the members shall expire in succession, one each year, and the House of Delegates shall elect annually one member to fill the vacancy except that in 1938 the House of Delegates shall elect one member to serve one year, one to serve two years, one to serve three years, one to serve four years and one to serve five years. The Speaker of the House of Delegates shall be ex officio member of this committee."

Add to Chapter VIII, Section 3, of the By-Laws the following:

"No appropriation for the expenses of any standing committee for any one year shall be in excess of a maximum or less than a minimum of an amount that may be recommended to the Board of Trustees by the House of Delegates."

Add to Chapter IX of the By-Laws the following new section:

"Sec. 4. The Committee on Public Relations shall have authority to act for the American Medical Association in conference with governmental or lay organizations in matters of public interest, subject at all times to the approval of the Board of Trustees. This committee shall have authority to employ expert and talented professional public relations counsel and assistance as it may deem advisable. Any decision by the Board of Trustees or by the Committee on Public Relations may be revoked by a two-thirds majority of the House of Delegates regularly convened."

Resolutions Requesting the Council on Medical Education and Hospitals to Study the Status of Clinical and Pathologic Laboratories and Other Departments in Hospitals

Dr. Francis F. Borzell, Pennsylvania, presented the following resolutions, which were referred to the Council on Medical Education and Hospitals:

WHEREAS, The American Medical Association has through its House of Delegates and its various bureaus and councils from time to time propounded certain principles of ethics and established standards of relationship looking toward the maintenance of the highest quality of professional service both in private practice and in hospitals; and

WHEREAS, Many of these pronouncements refer specifically to those special branches of medicine involving somewhat unusual relationship between hospitals, institutions and the physician practicing these specialties in the hospital; and

WHEREAS, Certain usages have sprung up which are tending to involve ethical and legal considerations; and

WHEREAS, It would appear to be highly desirable and in the best interests of good medical practice and sound public policy to have certain of the aforementioned pronouncements clarified, codified and in some instances reiterated; he it

Resolved, That the Council on Medical Education and Hospitals be requested to study the status of clinical and pathologic laboratories, radiologic departments and physical therapy departments in hospitals and institutions with a view toward standardizing the relationship of these services to these institutions and when necessary reaffirming principles of ethics involved in these relationships; and he it further

Resolved, That the Council be authorized to confer with such agencies as are deemed necessary to arrive at these conclusions.

Resolution on Motion Picture "Birth of a Baby"

Dr. C. W. Roberts, Georgia, presented the following resolution, which was referred to the Reference Committee on Executive Session:

WHEREAS, At the annual session of the Medical Association of Georgia, held in Augusta, April 26-29, 1938, a committee of the association which was appointed to view and censor the movie film "The Birth of a Baby" reported as follows:

"Your Committee, at the request of Dr. Traylor, after witnessing the presentation of 'The Birth of a Baby' at the Imperial Theater on the morning of April 28, 1938, unanimously agreed that the interest of maternal and child welfare would be advanced by the release of the production. Your chairman, however, feels that there should be some restriction as to the age of those admitted to its presentation. Signed, Joseph Akerman, Chairman," and

WHEREAS, In the discussion of this report in the house of delegates, doubt was expressed as to whether the conditions surrounding the production, release and propagandizing of the picture were in consonance with the policies of the House of Delegates of the American Medical Association, and

WHEREAS, The Medical Association of Georgia, having had submitted in it a request to approve the showing of the film in the movie theaters of Georgia, desired, before taking any action, to have the position of the house established, adopted the following resolution:

"That the recommendation of the Committee representing the Medical Association of Georgia be transmitted to our delegates to the American Medical Association for the consideration of the House of Delegates of that body at the San Francisco session, and that we do not give out any comment to the press at this time"; therefore he it

Resolved, That this resolution be referred to the appropriate reference committee of this House for consideration and recommendation bearing on the issues involved.

Resolution on Fee Schedules

Dr. C. W. Roberts, Georgia, presented the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

WHEREAS, state and county medical societies have from time to time, on their own initiative or at the request of others claiming a valid or social interest in the cost of medical services to a particular group, established so-called fee bills on which the contracting persons or groups agree to base charges; and

WHEREAS, Such fee bills often set up without due regard to the equitable interest of the various groups concerned furnish an implement through which exploitation is practiced and abuses encouraged; and

WHEREAS, The necessity for or advisability of such schedules has never been considered by the House; and

WHEREAS, Controversy over the application of such schedules is rife, serving to divert the attention of the contracting persons from the central fact—namely, the quality of medical care—thus reflecting unfavorably on the profession and lending comfort to those critics who charge it with the adoption of trade union methods; and

WHEREAS, It has been the unwritten rule, established by a long line of ethical practitioners both past and present, to adapt charges for medical services to the ability of his patient to pay, untrammelled by fixed community schedules; therefore be it

Resolved, That this device, appearing with increasing frequency, be examined by an appropriate agency of the American Medical Association to the end that the Association may declare itself on certain controversial points, among which are:

(a) The advisability of or necessity for fee schedules in the public interest.

(b) Their ethical or unethical qualities.

(c) Necessity for certain fixed principles to guide constituent units of the Association when and if it is deemed, in the public interest, necessary to adopt such a device, and

(d) Whether such schedules, approved by constituent units of the Association, should or should not provide for elasticity so as to permit of adaptation to wage levels, specialized medical services, variations based on differential costs as between urban, semiurban and rural practice and other related considerations.

Resolution on Revision of Principles of Medical Ethics

Dr. Robert A. Peers, California, presented the following resolution, which was referred to the Judicial Council:

WHEREAS, The Principles of Medical Ethics is the foundation of professional conduct for physicians; and

WHEREAS, Changing times alter tendencies toward interpretation of all ethical rules, although the nature of ethics remains unchangeable; and

WHEREAS, A careful study of the Principles of Medical Ethics makes it apparent that there exists a pressing need for clarification, amplification and codification of these tested and time honored rules of conduct; therefore be it

Resolved, That the Speaker of the House of Delegates appoint a Committee of Five to proceed toward the amplification, clarification, codification and revision of the Principles of Medical Ethics, directing the said committee to report to this House at its session in 1939.

Resolutions on Controlled Animal Experimentation

Dr. Elbridge J. Best, California, presented the following resolutions, which were referred to the Reference Committee on Hygiene and Public Health:

WHEREAS, The knowledge possessed by modern medicine and the remedial measures made available for the prevention, diagnosis and treatment of disease in human beings and in live stock and other domestic animals has been made possible only by controlled, humane and scientific animal experimentation, controlled by medical men, research workers and laboratories; and

WHEREAS, Controlled animal experimentation has uncovered the causes of contamination or blighting of many foods (fruits, vegetables and milk) which makes them dangerous for human and animal consumption; and

WHEREAS, Continuous research, study and investigation of causes and prevention of many human diseases, animal infections and causes for food deterioration are dependent on a continuation of controlled animal experimentation in order that human health and lives, as well as live stock and foodstuffs, may be saved and financial losses be prevented; and

WHEREAS, There are many poorly informed persons now active in an endeavor to enact legislation that would cripple legitimately and humanely controlled animal experimentation so vitally necessary to those scientific men who are seeking the etiology and prevention of conditions that still cause human suffering, that kill fowl, other bird life and animals and that affect the raising of foodstuffs; and

WHEREAS, These persons, commonly known as antivivisectionists, willfully repudiate, ignore and misrepresent the proved facts that have been established by scientific research and study and in their endeavor to secure the enactment of laws prohibiting animal experimentation, which laws and prohibition would cause much human suffering, loss of lives, destruction of animals and foodstuffs and also terminate the studies of scientists and laboratory research workers, persist in their efforts to mislead people; therefore be it

Resolved, That: 1. Controlled animal experimentation is of supreme importance in the study and investigations seeking the cause and cure of factors and conditions that affect the health and cause the death of human beings, animals, fowls, dogs, birds and live stock; and

2. Any and all efforts to restrict or prohibit controlled animal experimentation will cause untold suffering, loss of lives of human beings, animals and live stock and produce an uncalculable financial loss to every community, industry and the commonwealth; and be it further

Resolved, That the American Medical Association condemns the efforts of all who endeavor to cripple scientific research by seeking to obtain the enactment of laws hampering or prohibiting the use of animals in research investigation; and further be it

Resolved, That the House of Delegates recommends that each unit of this Association be urged immediately to undertake the education of the lay public on the need and value of controlled animal experimentation and to expose the unjustifiable and unsupportable claims and allegations of those who seek to obtain laws that may hamper or prohibit the humane use of animals in research studies.

Resolution on Recognition of Acting Assistant Surgeons of the Spanish American War

Dr. Elbridge J. Best, California, presented the following resolution, which was referred to the Reference Committee on Legislation and Public Relations:

The House of Delegates of the American Medical Association, now in annual session, reaffirms the statements and convictions as transmitted by the Board of Trustees of the American Medical Association to the House of Delegates at the annual session in Cleveland in 1934, relative to the discrimination and neglect meted out to those men who served as acting assistant surgeons during the Spanish American War, Philippine Insurrection and Boxer Uprising.

WHEREAS, This situation has in no wise been remedied, notwithstanding the efforts and requests of a certain number of these men to bring this neglect to the attention of Congress; and

WHEREAS, Trained nurses who served on contract during this conflict have been declared to have been an integral part of the army and have thus been pensionable since 1922, and all medical officers who served during the World War have a pensionable status; and

WHEREAS, Three fourths of the members of the Yellow Fever Board which rendered a service outstanding in the history of mankind were acting assistant surgeons, one of whom lost his life in the performance of this duty; therefore be it

Resolved, That every officer and agency of our organization, including the legislative committees of our constituent state societies, be empowered and urged to request their respective members of Congress, in justice to themselves and in fairness to this group, to right the wrong and discrimination which has been visited on a body of loyal men who volunteered in an emergency of their government while at war;

Therefore, it is the unanimous sentiment of this body that Congress be requested to give that recognition which has so long been withheld from this group.

Resolution on Hospital Insurance

Dr. Charles H. Goodrich, New York, on behalf of the Medical Society of the State of New York, presented the following resolution, which was referred to the Council on Medical Education and Hospitals:

WHEREAS, The Medical Society of the State of New York on May 9, 1938, adopted revised principles on all matters pertaining to hospital insurance; and

WHEREAS, These principles are known as the restatement of Proposition No. 3 of the Booth Committee Report of 1933 and in substance are as follows:

Preamble: There is in every community a group of people below the "comfort level," on whom the costs of medical care impose a heavy burden. These are self-respecting people of the salaried class in most instances, whose living expenses are met from their weekly earnings. For them the greater part of medical costs comprise charges for hospital and nursing care.

Revision, 1937:

(a) Hospital care shall mean provision of bed, board, general nurse service, customary surgical dressings and medicines, and other facilities of the institution not including medical care as defined in b.

(b) Medical care shall mean: any procedure or service by a licensed physician acting under authority of section 1250 of article 48 of the Education Law of the State of New York.

(c) Hospitals making contracts with organizations, acting under chapter 593 of the laws of 1934—the Insurance Law of the State of New York—shall not implicate themselves with conditions inconsistent with the principles and definitions herewith stated.

(d) The operation of such hospital insurance in any community shall not discriminate against any reputable institution, whether voluntary or proprietary.

(e) Admission of patients for care under the benefits of such hospital insurance shall be only through reference by a private physician. Exemption to this provision shall be made for the exigency of any emergent need.

(f) Certificates of membership in such association shall specifically state that the insurance does not provide for any medical care as defined in b. Actual wording of the certificate to be approved by the local county medical society or societies.

(g) Every hospital insurance plan operating under theegis of this proposition shall develop the details of its operation to conform with such principles and policies as from time to time may be determined by the local county medical society or societies.

(h) When it is so desired by the local county medical society satisfactory representation from the membership of the local county medical society on the board of management of the hospital insurance shall be arranged; and

WHEREAS, On May 9, 1938, the Medical Society of the State of New York directed its delegates to urge adoption of these principles by the House of Delegates of the American Medical Association; therefore he it

Resolved, That the House of Delegates of the American Medical Association hereby approve the principles above stated and that the Council on Medical Education and Hospitals be instructed to refuse or withdraw approval of hospitals that do not comport themselves in accordance with these principles.

Resolutions Requiring of Foreign Graduates Full Citizenship in the United States

Dr. William R. Molony Sr., California, presented the following resolutions, which were referred to the Reference Committee on Medical Education:

WHEREAS, The license to practice medicine and surgery in many countries is limited strictly to citizens of these countries; and

WHEREAS, In addition to holding full citizenship, each applicant is required in several of these countries to show that his medical education was pursued and completed in said countries; and

WHEREAS, Many foreign graduates in medicine and surgery in increasing numbers are seeking admittance to the practice of medicine in these United States; and

WHEREAS, In order to convey adequately to these applicants a full and satisfactory knowledge of the American conception of patriotism and of ethical ideals in medicine, it is necessary that a period of residence be required; therefore he it

Resolved, That in addition to the requirements for foreign graduates, as outlined in a resolution adopted by the House of Delegates for the American Medical Association in 1936, it is highly desirable that an additional requirement of full citizenship in the United States of America be demanded; and be it further

Resolved, That the House of Delegates of the American Medical Association approve the foregoing and that a copy be sent to the properly constituted officers of each examining board of the United States and to the Federation of State Medical Boards, with the request that they consider seriously urgent need for the adoption of such rules and/or legislation necessary to put the purposes of these resolutions into effect.

Resolution on Rockefeller Cancer Control Fund

Dr. Henry C. Macatee, District of Columbia, presented the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

WHEREAS, Mr. Willard D. Rockefeller of New York City proposes to establish the "Rockefeller Cancer Control Fund" as a memorial to his mother; and

WHEREAS, Mr. Rockefeller has agreed to assume all responsibility for the establishment of the fund and for making it perpetual by creating an organization for that purpose; and

WHEREAS, The proposed fund is designed to meet the practical needs for the control and treatment of cancer, as distinguished from other foundations to provide for research in cancer; and

WHEREAS, It is proposed that the resources of the fund shall be dispensed through an Advisory Council to be composed mainly of outstanding physicians, and that, in order to provide for the application of funds so dispensed more directly to the needs of the current clinical problems of cancer, funds so dispensed shall be expended through organized, ethical medical channels, by allocation of such funds along three general lines, viz:

First: To provide remuneration to ethical physicians for treatment and care of indigent cancer patients and for specified clinical work.

Second: To furnish equipment and materials to specified clinics and hospitals for cancer work.

Third: For educational purposes; and

WHEREAS, Dr. Edith Se Ville Coale of Washington, D. C., as the friend and physician of Mr. Rockefeller's mother for many years, has been requested by him to serve as trustee of the proposed fund; and

WHEREAS, Dr. Coale, desiring first the approval of the medical society of which she is a member, presented the proposal to the executive committee of the Medical Society of the District of Columbia, which committee, constitutionally acting for the society now in recess, approved the proposed project in principle and directed the delegate of the society to present the plan as herein described for the approval of the House of Delegates of the American Medical Association; now, therefore, he it

Resolved, That the House of Delegates of the American Medical Association, in convention assembled at San Francisco in 1938, approves in principle the creation of the Rockefeller Cancer Control Fund for the purposes indicated by Dr. Edith Se Ville Coale, Trustee.

Resolutions on Program of Public Relations

Dr. Lyell C. Kinney, California, presented the following resolutions, which were referred to the Reference Committee on Legislation and Public Relations:

WHEREAS, The American Medical Association has attempted for many years to appraise and meet the changing problems in the provision and distribution of medical care; and

WHEREAS, The American Medical Association has constantly endeavored to raise the standards of medical practice and has maintained a fixed policy that any necessary changes in medical practice must improve and not sacrifice the quality of medical care; and

WHEREAS, It is the policy of the American Medical Association to endeavor to provide adequate medical care to all the people in this country, and to that end the American Medical Association has offered its facilities and its cooperation to any authorized representative of the government to promote orderly progress and greater efficiency in the provision of medical care; and

WHEREAS, There is a constant and determined attack on the American Medical Association in lay magazines in an effort to discredit the policies of the American Medical Association with the public and the government, to misrepresent the work and ideals of the Association and to mold public opinion against the Association; therefore, he it

Resolved, That the House of Delegates of the American Medical Association direct the Board of Trustees to develop an aggressive and forceful program of public relations in the Bureau of Health Instruction to inform the public and governmental agencies concerning the policy of the American Medical Association with regard to changes in medical practice, and the reasons therefor; and he it further

Resolved, That it is the judgment and the request of the House of Delegates that the Bureau of Health Instruction employ outstanding professional public relations counsel to direct a sustained program for the purpose of presenting to the public the true facts concerning the need for medical care and the position of the medical profession concerning the problems involved.

Resolution on Standards for the Practice of Medicine in Hospitals

Dr. E. H. Skinner, Section on Radiology, presented the following resolution, which was referred to the Council on Medical Education and Hospitals:

WHEREAS, The Board of Trustees of the American Medical Association, in its annual report, has directed attention to certain conditions in these words, "The present situation in the practice of anesthesia, pathology and radiology in hospitals and the potentiality of increasing the number and variety of special medical services controlled by hospitals call for the establishment of a similar ideal standard designed to permit a constant improvement of practice in hospitals"; and

WHEREAS, The said Board in its report has further pointed out that the turmoil between hospitals and national societies of anesthetists, of pathologists and of radiologists cannot continue without harmful effects on the practice of medicine in hospitals; he it

Resolved, That this House of Delegates instruct its Board of Trustees to direct the Council on Medical Education and Hospitals to proceed toward the creation of standards for the practice of medicine in hospitals, such standards to include the requirements for approval of hospitals and the standards which govern the relations between physicians and hospitals.

The meeting recessed at 1:10 p. m. to reconvene Tuesday morning, June 14, at 9:30 a. m.

Second Meeting—Tuesday Morning, June 14

The House of Delegates was called to order at 9:30 a. m. by the Speaker, Dr. Nathan B. Van Etten.

Roll Call

It was moved by Dr. Arthur C. Morgan, Pennsylvania, seconded by Dr. J. Newton Hunsberger, Pennsylvania, and carried, that the House dispense with the roll call.

Presentation of Minutes

On motion of Dr. J. Newton Hunsberger, Pennsylvania, seconded by Dr. John Z. Brown Sr., Utah, and carried, the House dispensed with the reading of the minutes.

Report of Reference Committee on Credentials

Dr. Deering G. Smith, Chairman, reported that 164 delegates had registered before the close of the meeting of the House on Monday, June 13, and that four delegates had registered since that time, making a total registration of 168. The Speaker declared that this would constitute the roll of the House.

Report of Judicial Council

Dr. George Edward Follansbee, Chairman, presented the following report of the Judicial Council acting as a reference committee, which was adopted on motion of Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. J. Newton Hunsberger, Pennsylvania, and carried:

The resolution introduced by Dr. Robert A. Peers, California, provides for a rewriting of the Principles of Medical Ethics by a committee of five appointed by the Speaker of the House.

The Principles of Medical Ethics was originally written in 1903 and revised in 1912 by a notable committee consisting of Drs. Frank Billings, Illinois; James E. Moore, Minnesota; A. B. Cooke, Tennessee; Alexander Lambert, New York, and Hubert Work, Colorado. The text today remains the same as the revision made in 1912 with the exception of such amendments as changing times and practices have demanded to meet new conditions. The principles underlying and expressed in the original text have not changed, and amendments that have been made have merely emphasized and clarified the principles with respect to new developments in medical practice. An attempt to rewrite the Principles of Medical Ethics was made at a later date but was abandoned because of failure to produce a more satisfactory text.

The ethics of medicine is stated as it should be in principles of conduct instead of rules. To define and interpret these principles so as to cover every relation of the medical man would be to set up an endless system of rules, regulations and laws approaching in character a criminal code, with its invitation to violation by sophisticated reasoning or through technicality. A rule, regulation or law may be circumvented, but the principle underlying the law cannot be avoided by such means. As occasion arises, amendments will doubtless be made in the future as they have in the past, but these are strenuous times of rapid and radical change and no one can predict the immediate or remote future. The Judicial Council, as your reference committee, recommends that "amplification, clarification, codification and revision of the Principles of Medical Ethics" be postponed.

Respectfully submitted.

GEORGE EDWARD FOLLANSBEE, Chairman.

JOHN H. O'SHEA.

EDWARD R. CUNNIFFE.

WALTER F. DONALDSON.

JOHN W. BURNS.

Report of Reference Committee on Reports of Board of Trustees and Secretary

Dr. Frederic E. Sondern, Chairman, presented the following report, which was adopted by sections and as a whole on motions duly seconded and carried after discussion:

REPORT OF SECRETARY

1. The Secretary reports a gratifying increase in membership of close to 4,000 and in Fellowship of over 2,000, both better records than in the preceding several years, which deserves your commendation.

He directs attention to the steady growth of better organization and field work resulting in helpful contacts with civic and official organizations and the benefits which accrue therefrom. He emphasizes the need for increased interest in scientific work, particularly in the county societies, and suggests that it can be had if the program committees concerned will give greater attention to subjects which tend to awaken and hold the general interest of the membership. In the opinion of your committee this is often due to the practice of leaving the construction of the programs to committees named for this purpose. When the current president concerns himself personally with this matter in the interest of an outstanding administration the results are usually gratifying. Your committee wishes to emphasize that the American Medical Association essentially depends for its strength on the activity of all its constituent state and component county units, and it is therefore incumbent on the state councils to stimulate each and every one of the component county societies to hold regular meetings at which the members should be given the opportunity to renew interest in the scientific and organizational aspects of medicine. Unfortunately there appears to be a deplorably large number of these units that are stagnant, and this condition must be corrected if the Association is to function effectively to your satisfaction.

Your committee asks you to note that the report of the Secretary mentions nothing of the correspondence, using this term in the broad sense, which must result from a membership of close to 110,000 doctors. These countless inquiries, demands, suggestions and complaints, every one of us knows, meet with that invariably prompt, courteous and explicit response which

has made our Secretary so universally admired. We hold this genial, efficient and loyal officer in affectionate esteem, and your committee wholeheartedly endorses his recommendations.

2. The report of the Secretary contains reference to amendments to the Constitution proposed by the Judicial Council, which have had the approval of the Reference Committee on Amendments to the Constitution and By-Laws of the 1937 session of the House.

As these amendments require to be put in proper form for proposed inclusion in the Constitution, they have been referred by the Speaker to the Committee on Amendments to the Constitution and By-Laws for this purpose.

REPORT OF BOARD OF TRUSTEES

3. Resolutions on the Death of Dr. George H. Simmons: The report opens with resolutions on the death of Dr. George H. Simmons, as follows:

WHEREAS, Dr. George H. Simmons rendered distinguished service to the medical profession and to the American Medical Association from 1899, when he became Secretary and Editor, through 1924, when he retired holding the positions of Editor and General Manager; and

WHEREAS, During this period of twenty-five years, his wise leadership, his courage, his progressiveness and his initiative advanced the interests and the status of the Association to heights never before reached by any medical organization; and

WHEREAS, His work for the American Medical Association was characterized by intelligence, unselfishness, honesty and righteousness, and his interest endured to the very end of his days; and

WHEREAS, The Board of Trustees, through its intimate contact with Dr. George H. Simmons in all of these works, is cognizant of the extent to which he gave of himself freely for the good of all; therefore be it

Resolved, That this Board of Trustees spread on its minutes its recognition of his accomplishment, and that it tender to his relatives a suitable copy of these resolutions and its sincere sympathy in their sorrow at his passing.

In addition, your Committee desires to call your attention to the fearless courage of this man's convictions in the interest of creating what has proved to be the outstanding weekly medical publication in the world, in which effort he was often in bitter opposition to prominent medical men, who in consequence were eager to depose him in those early days of his remarkable aims. It was his unflinching adherence, without exception, to the unusually high standard he established which gained him the respect and admiration of the membership and established his work as one of the foundation stones for the glory of our Association. His astute vigilance in the interest of American medical men in the late war is another achievement which deserves your admiration. Your committee also desires to record its regard and sympathy.

4. The report of the Board of Trustees covers more than 130 pages of the Handbook, with many additional actions which have been presented since its publication. Aside from this record of the work of the Board it includes the activities of the various councils, bureaus and departments. All of these show a notable expansion of activities over former years in furthering the best interests of our Association for the ultimate benefit of the public. It is difficult for the reference committees concerned to do full justice to the record of such an extensive collection of endeavors in the short period which elapses between their first meeting and the term set for these reports. Every member of this House should read the original reports in detail in order to be acquainted with the nature and scope of these activities. They are not the expressions of one man or of a selfish clique, but they represent the labor of a relatively large number elected or appointed by you on the basis of their special fitness to investigate and confer and then to express for you the opinions and edicts of organized medicine, subject to your review. Your Board of Trustees is painstaking in its efforts to carry out your instructions in these various fields of endeavor, and its unusually uniform competence should command your respect and your loyalty.

It is further the duty of the members of this House, in the opinion of your committee, to carry away to constituent state and component county organizations at least a summary of the Trustees' report, so that individuals and groups can more understandingly express themselves on the current opinion of organized medicine. In recent time there has been an increasing interest of the public in physicians and their ways and in public health, stimulated by all manner of publicity in newspapers

and in weekly and monthly magazines, some of which is contrary to the best interests of the public. Almost every doctor is questioned by patients and friends on these matters, and his more detailed knowledge of the conclusions of organized medicine tends to safeguard the well-being of the American people.

5. General Work and Business Operations: The gross earnings for 1937, amounting to more than \$1,650,000, with operating expenses under \$983,000, both in advance of the previous year, give you an idea of the magnitude of the operations of your Association. The net income of over \$122,000, of which over \$83,000 represents income from investments and over \$38,000 net operating income, reflects the conservative management.

The details concerning the completion of the Association building and the invitation to all members to visit it are noteworthy. The number of employees, 616, compared with 565 last year and 550 the year before, is further evidence of the increasing activity of the Association, all of which has the approval and commendation of your committee.

6. THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION: That this weekly medical journal is absolutely the leader in its field is generally acknowledged the world over. It is found not only in all medical libraries overseas and in the more representative hospitals as well but also in the offices of the more prominent physicians in all foreign countries. The maintenance of its high standards as well as its progress in new fields as detailed are the result of its outstanding editorial management, headed by the dynamic editor, all of which your committee desires to commend highly. The incorporation into THE JOURNAL of the former BULLETIN, giving all members the benefit of the more intimate Association news, is particularly valuable at this time of public interest in medical affairs, and your committee desires to voice approval.

Special Journals: The high standards of these publications are also generally recognized. While increased circulation and reduction in cost over outlay continue, the Board of Trustees cautions that there is a limit to the continued absorption of this expense beyond which it considers it unwise to go. While your committee is in complete accord with the Board in the matter of conserving resources in these days of financial uncertainties, it must also be had in mind that the effectiveness and prestige of the Association are in large measure judged by the publications it issues. Our record of continued expansion and faultless production is the envy of national associations elsewhere in the world and the source of much deserved pride. In the opinion of your committee every reasonable effort should be made to continue all the publications, and, if the Board really becomes concerned about the expense burden, thought might be given to the possibility of curtailing some other activities actually less important in maintaining the scientific status of the Association.

Library and QUARTERLY CUMULATIVE INDEX MEDICUS: Your committee wishes cordially to endorse the words of the Board, as follows: "The QUARTERLY CUMULATIVE INDEX MEDICUS, recognized as one of the greatest contributions of the Association to the advancement of medical science, had wider circulation in 1937 than in the previous year, but the cost of publication exceeded income received from subscriptions by the sum of \$42,616.32, slightly more than in 1936 but less than in 1934 and 1935. This publication represents an essential activity of the Association and deserves far more liberal support than it now receives." The value of this publication and its credit to the Association as an outstanding achievement fully justify its cost in the opinion of your committee. Its importance to all scientists the world over might easily interest one of several foundations to donate funds for support, and your committee would suggest the application for a grant to aid at least in the expenses of production and possibly to allow an expansion to include the entire field of medical literature.

The various branches of the library service as detailed in the report are definitely a great aid particularly to those without nearby libraries, and here also the labor and expense involved seem to your committee to be fully justified.

Standard Classified Nomenclature of Disease: The taking over of this notable work by the Association, which will do so much to standardize nomenclature in medical literature, is a commendable step that has the approval of your committee.

HYGIEA: This publication continues to serve the purposes for which it was founded and its increasing success is indicated by the constant gain in circulation. It is an achievement despite the excess of cost over income and the editor deserves congratulation on what he has been able to accomplish in this difficult field.

7. Cooperative Medical Advertising Bureau: Your committee notes with pleasure the service of this endeavor by the participation of thirty-three of the constituent state medical associations. It assures the progress of honest advertising and has the commendation of your committee with the recommendation that efforts should be made to secure the participation of the other state society publications. We learn with regret the loss of Mr. E. W. Mattson as director, the man whose energies had so much to do with the growing success.

8. Motion Picture on Syphilis: This film, produced by the Association in conjunction with the United States Public Health Service, has been a prominent factor in the recent state and national efforts in venereal disease control and represents just another commendable effort of our Association in the interest of public health.

9. Retirement Fund: The establishment of this fund and the plans for its annual enhancement are quite in keeping with modern practice and have the full endorsement of your committee.

10. Medical Patents: The plan of the Board to evolve a method for standardization and coordination in the matter of medical patents has the endorsement of your committee, which joins in the hope that a suitable practice in control may be established. The recommendation to compile a complete list of the holders of such patents and the intention to ask them to attend a national conference to achieve these ends are also commended by your committee.

11. Proposed Change in Name of Bureau of Health and Public Instruction: The recommendation to change the name of this bureau to Bureau of Health Education has the endorsement of your committee, which suggests that the matter be referred to the Committee on Amendments to the Constitution and By-Laws for suitable action.

12. The Division of Drugs, Foods and Physical Therapy: The creation of this division by the Board, composed of the Council on Pharmacy and Chemistry, the Council on Foods and the Council on Physical Therapy, has made it possible to effect closer correlation of the work of these three councils and to enhance administrative efficiency, which action has the endorsement of your committee.

Council on Pharmacy and Chemistry: The important work of this council in the interest of approved therapeutic substances again shows an almost burdensome increase, and the record of its labors has the admiration of your committee. Its publications are both extensive and noteworthy and deserve the full support which they enjoy. These efforts to establish rationalism in therapeutics are most commendable, particularly those concerning vitamins and the endocrine principles.

Council on Physical Therapy: The continued activity of this council in the evaluation and standardization of physical aids in the healing art is praiseworthy and its continued educational program deserves every encouragement.

Council on Foods: It is evident that the efforts of this council to promote truthful advertising of wholesome foods and the necessarily associated labors are a constantly increasing task requiring a large amount of time. In consequence of the stress of this work it was found necessary to conserve the facilities of the Council by accepting only products that seem to require the safeguarding of the public. The need for the setting up of an exempted list should be realized and its object understood. The Council can well exempt products that enjoy competent government control and those of such nature that safeguarding is not necessary.

The Chemical Laboratory: The investigations of the laboratory continue to be of the greatest assistance to the councils requiring this service. Its efficiency and prompt emergency service were strikingly demonstrated in the recent cases of diethylene glycol poisoning. This prompt and thorough service was possible only by a complete organization and a previously established

list of consultants for specific purposes. Your committee desires to express its admiration.

Council on Industrial Health: Your committee commends the manner of formation of this recently established council and records the summary of the Board's report as follows: "The Council on Industrial Health, organized in December 1937, has held two official meetings and has developed a working organization through the appointment of a secretary and the creation of official committees. Articles dealing with various subjects of major importance in the field of industrial medicine are in course of preparation for publication. The Council has adopted official rules and is proceeding as rapidly as possible, with due conservatism, toward the prosecution of plans that have been officially adopted."

13. Bureau of Legal Medicine and Legislation: This report has been referred to the Reference Committee on Legislation and Public Relations.

14. Bureau of Medical Economics: This report also has been referred to the Reference Committee on Legislation and Public Relations.

15. Bureau of Health and Public Instruction: The commendable activity of the Bureau is another function of the Association showing evidences of expansion and ever increasing activity. The dramatized radio programs as a means of public health instruction are a distinctive success, fully satisfying the modern sophisticated audiences, and they have almost completely replaced in popularity the ordinary radio talks, even those by prominent members of the profession. The cooperation of the National Broadcasting Company should be appreciated, and its aid in suggesting the publication and distribution to the schools of a workbook on programs intended for high schools written by Drs. Bauer and Teschner of the Bureau is also noteworthy. The protection of research by the opposition to proposed laws restricting animal experimentation has had the careful attention of the Bureau. The outlook at the moment is serious in Massachusetts and the District of Columbia, particularly on account of the restricting legislation in California. Experiences in New York have demonstrated the desirability of inviting the legislators themselves to visit university and research laboratories in order to learn the truth concerning the experimental use of animals in medical progress. The family physician has been found a most potent aid in convincing the public of the need of animal experimentation in the advance of knowledge not only in human but in animal disease as well. The annual distribution by the Bureau of the pamphlets by Cannon and Drinker and John Devey to graduating medical students is most desirable.

The cooperation of the Bureau in general and its director in particular with lay organizations has been singularly successful in the methods of public health instruction.

16. Bureau of Investigation: This bureau has continued to function in its well known way, and the receipt and answering of from ten to twelve thousand communications a year indicate how extensive its activities are. Its problems are many and often complex, requiring most astute handling to avoid recriminations.

17. Bureau of Exhibits: The continually increasing scope of the Scientific Exhibit is shown by the presentation of 254 exhibits at the 1937 session of the Association, again a record number. The constant further perfection of the quality of these exhibits has given them a most enviable international reputation. They truly represent one of the noteworthy educational achievements of the Association, of which we may be justly proud. The exhibits dealing with the activities of the Association are likewise outstanding in quality and interest. The fact that they were sent to thirty-three states on 115 separate occasions indicates their educational service, which your committee desires to emphasize and commend.

18. Report of Committee to Study Contraceptive Practices and Related Problems: This report has been referred to the Reference Committee on Executive Session.

19. Report of Committee to Study Air Conditioning: This report on a most important subject should be studied by every physician coming in contact with this problem as demanded by the statement that opportunities for injury to persons sub-

jected to artificial climates do exist. The report represents a very large amount of study and investigation and deserves the gratitude of the Association to those who undertook it. It is evident not only that a problem exists but that its full solution has not yet been found. Your committee would recommend extending to these investigators our appreciative thanks for their able and extensive labor, with the request that they continue this important service in any way they consider of additional value in the interest of public health.

20. Report of Committee to Determine the Value of X-Ray Film with Paper Base as a Substitute for Film with Gelatin Base: This most interesting and instructive report, which deserves your close study, consists of a majority report by three members of the committee and two minority reports by one member each. It represents a large amount of work which deserves your full appreciation. Your committee desires to record its admiration of such educational tasks done gratuitously for the membership of the Association.

21. Report of the Committee on Scientific Research and Report of the Committee on Therapeutic Research: Your committee is in full accord with these many deserved grants made to encourage research. It believes fully in the support of these doubtless qualified individuals, though it is a less usual aid than collective endowment. A survey will demonstrate that the most important discoveries have been the result of individual rather than collective effort, and this is the basis for the commendation of your committee.

22. Request from the American Red Cross for Approval of Its Medical Policies in Disaster: Your committee has considered the request of the American Red Cross for the approval of medical policies in disaster. Dr. William de Kline, medical adviser of the American Red Cross, and Dr. Herman Baker, president of the Indiana State Medical Association, appeared before your committee. Your committee desires to recommend that you agree with the statement that the primary responsibility for the care of the sick and injured in disaster rests with the local physicians and dentists. The function of the American Red Cross should be that of cooperation with local physicians and dentists by assisting in organizing and directing medical relief work and by providing the needed facilities that are lacking for the emergency.

In general your committee recommends approval of the principles and practices outlined for the handling of medical features of disaster relief, and endorsement of the hope that physicians and dentists, like other community leaders engaged in various phases of disaster relief work, will give their services on a volunteer basis for patients unable to pay. With regard to detailed arrangements for emergency work when volunteer service is not available, your committee feels that a single plan to be operated all over this large country would be impracticable and unwise. However, detailed arrangements for possible emergency could be made by mutual agreement between the American Red Cross and local medical organizations so that a standard might be set in advance.

Respectfully submitted.

FREDERIC E. SONDERN, Chairman.
CLYDE L. CUMMER.
JOHN H. FITZGIBBON.
FRED W. RANKIN.
FELIX J. UNDERWOOD.

Report of the Board of Trustees

On motion of Dr. A. T. McCormack, Kentucky, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried, the following report of the Board of Trustees acting as a reference committee, which was presented by Dr. Arthur W. Booth, Chairman, was adopted:

Concerning the recommendations from the house of delegates of the Connecticut State Medical Society that the House of Delegates of the American Medical Association establish a council composed of individuals especially qualified to deal with the problems of medical care, to be known as the Council on Medical Care, and urge each state medical association to appoint a committee on medical care to cooperate with the Council on Medical Care of the American Medical Association and suggest that each county medical society also appoint a committee on

medical care, the Board of Trustees has to report that these recommendations are part of the plan which was originated some months ago, as announced in THE JOURNAL, and which is now in process of becoming effective. The designation of this committee as a Committee on Medical Care will be useful in causing the public to realize that the American Medical Association is concerning itself seriously with this problem.

Telegram from Dr. E. H. Cary, Texas

Dr. Holman Taylor, Texas, reported that he was in receipt of the following telegram from Dr. E. H. Cary, Texas, which the Speaker stated would be spread on the minutes:

Fortunately, with two good kidneys and a first-class heart at 66 and excellent medical care, I am about to conquer the worst fight of my life. Please express in terms of affection as you can so well do the feeling I have for the members and their love and affection which have become a part of me. This untimely illness denied me my greatest annual pleasure, for in the House of Delegates I meet the men who know more about the possibilities of medicine and who, if given a reasonable length of time, will come nearer making a diagnosis of human welfare than any other group.

Messages of Congratulation

On motion of Dr. Carl F. Vohs, Missouri, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried, the Secretary was requested to send telegrams of congratulations to Drs. E. H. Cary, Texas, and Howard Morrow, Chairman of the Local Committee on Arrangements, on the improvement of their health.

It was requested by Dr. J. Newton Hunsberger, Pennsylvania, that the motion be amended to include the name of Dr. Donald Guthrie, Pennsylvania. The amendment was accepted and the motion was carried.

Report of Reference Committee on Medical Education

Dr. William D. Johnson, Chairman, presented the following report:

1. Resolutions on Medical Practice in Hospitals: The resolutions introduced by Dr. E. H. Skinner, Section on Radiology, Dr. Francis F. Borzell, Pennsylvania, and Dr. Charles H. Goodrich, New York, were taken up and given consideration by the Council on Medical Education and Hospitals acting as a reference committee and will be reported on by that body.

2. Resolutions Requiring of Foreign Graduates Full Citizenship in the United States: The resolutions introduced by Dr. William R. Molony Sr., which in essence express the desirability that foreigners, graduates of foreign institutions, be required to obtain full citizenship in the United States of America before being admitted to practice, meet the full approval of your committee.

3. Report of Council on Medical Education and Hospitals: Your committee has given due and proper consideration to the report of the Council on Medical Education and Hospitals and finds itself in accord with the several recommendations of the Council.

Your reference committee particularly wishes to commend the survey of medical education made by the Council and believes that this study should be so published as to constitute a permanent record of the Association's contribution to this field of professional education. If further funds are required for the final consummation of this project, the committee recommends that proper appropriations be made for this purpose.

Your committee wishes to endorse the report of the Council on Medical Education and Hospitals as a whole, including Supplement A stating the essentials of an acceptable medical school.

Respectfully submitted.

WILLIAM D. JOHNSON, Chairman.
JOHN W. AMESSE.
J. C. FLIPPIN.
MCLAIN ROGERS.
WALTER E. VEST.

On motions, duly seconded and carried, the report of the Reference Committee on Medical Education was adopted section by section and as a whole.

Report of Council on Medical Education and Hospitals

Dr. W. D. Cutter, Secretary of the Council, presented the following report of the Council on Medical Education and Hospitals acting as a reference committee:

The resolutions of Dr. Francis F. Borzell, Pennsylvania, Dr. Charles H. Goodrich, New York, and Dr. E. H. Skinner, Section on Radiology, which were referred to the Council on Medical Education and Hospitals, all dealing more or less with the same subject, were considered together. The proposers of these resolutions, the delegates from the Massachusetts Medical Society, members of the California Medical Association and others met with the Council to express their views concerning the problems that concern the practice of medicine in hospitals by radiologists, pathologists and anesthetists. These problems have been rendered more acute by the rapid extension of systems of group hospital insurance within the last few years. The Council believes that these problems are of vital concern to the medical profession; that unwise decisions at this time may lead to consequences that would be disastrous to physicians and to the public alike, and that, therefore, a serious study should be made of existing relationships between hospitals and the physicians practicing therein, especially in the departments of anesthesia, radiology, pathology and physical therapy, with a view to standardizing the relationship of these services to the hospital and, where necessary, of reaffirming the principles of ethics involved.

The Council recommends that it, jointly with the Bureau of Medical Economics, be authorized to undertake these studies and to confer with other interested agencies, in order that it may be in a position to establish ethical standards for the practice of medicine by physicians holding positions in hospitals and to prevent the exploitation of either the public or the profession. If during this study it is revealed that hospitals registered and approved by the Council are exploiting the public or the profession, such approval may be revoked.

Respectfully submitted.

RAY LYMAN WILBUR, Chairman.
JOHN H. MUSSER.
FRED MOORE.
FRED W. RANKIN.
CHARLES GORDON HEYD.
W. D. CUTTER, Secretary.

It was moved and seconded that the report of the Council on Medical Education and Hospitals be adopted.

Dr. R. W. Fouts, Nebraska, moved that the word "may," the third word from the end of the report, be changed to "shall," and the motion was seconded by Dr. Francis F. Borzell, Pennsylvania. After discussion by Dr. Olin West, Secretary, this amendment was laid on the table on motion of Dr. A. A. Ross, Texas, seconded by Dr. Robert F. Barber, New York, and carried.

Dr. W. H. Seemann, Louisiana, moved that the report of the Council on Medical Education and Hospitals be adopted, and the motion was seconded by Dr. John Z. Brown Sr., Utah, and carried after discussion.

Report of Committee on Legislative Activities

Dr. F. S. Crockett, Indiana, in the absence of Dr. E. H. Cary, Chairman, presented the following report of the Committee on Legislative Activities, which was referred to the Reference Committee on Legislation and Public Relations:

The Committee on Legislative Activities regrets that owing to the present serious illness of Dr. E. H. Cary, Chairman, this report covers only a portion of committee activities.

Concerning matters of general interest relative to legislative activities in Washington, the committee found no occasion to visit the Capitol. During the year Dr. E. H. Cary and Dr. C. B. Wright from time to time, while there, found opportunity to keep in close touch with the legislative and administrative branches of the government. Extensive correspondence by the committee secretary, Dr. R. L. Sensenich, is evidence of increasing interest by the profession generally.

The Veterans' Administration is now equipped with a total of eighty-one facilities having a bed capacity of 49,558. These

are divided into neuropsychiatric, twenty-six, with 25,648 beds; general medical and surgical, forty-three, with 18,453 beds; tuberculous, twelve, with 5,457 beds. Number of admissions in 1937: neuropsychiatric, 22,183; general medical and surgical, 108,274; tuberculous, 11,080; total, 141,537.

Bills pending in Congress reported in February of this year, proposing new instruction and additional beds to existing facilities, present a rather startling array: neuropsychiatric, 2,194; general medical and surgical, new hospitals, twenty-one, with 5,100 beds and other additional beds, 2,649; tuberculous, 400 beds.

It is worthy of note that this continued and recurring demand for increased building of hospital facilities does not represent the desire of any large group or of the Veterans' Administration. In all probability very few of these bills will be reported out of committee.

Committee activities have included meetings with groups having medical problems or the activities of which might create situations of interest to the profession. The committee participated in the meeting last December of the American Public Health Association, the U. S. Public Health Service and members of the Board of Trustees, where the problem of medical care for the indigent and those whose income is below the subsistence level was considered.

Last December the committee was represented at the annual convention of the Associated Women of the American Farm Bureau Federation. This group has a membership of 475,000 and is affiliated with the American Farm Bureau, which has a membership of over a million. Organized agriculture as represented by this group continues to seek better medical and hospital care for those living in rural districts. Three years ago there was a strong demand for indorsement of measures providing medical care through governmental agencies. Assurances of sympathetic cooperation on the part of our organization and the study of the whole problem succeeded in obtaining a more conservative attitude by this Farm Bureau affiliate.

Since then your committee, with the assistance of Dr. R. G. Leland, Director of the Bureau of Medical Economics, has sought factual data in support of this objective.

Evidence of continued interest on the part of the Farm Bureau women is shown by the following resolution, adopted at their last convention:

HEALTH

A. We express our confidence in the medical and dental professions and appreciate the services rendered in the pursuit of positive health for rural America. However, we realize that the needs in medical care, dental care and hospitalization in rural districts are not provided for adequately because of prohibitive costs;

We therefore request that the medical association join with us in a plan to further the distribution of their services by allowing county medical boards and individual doctors the right to cooperate with groups of rural people in securing adequate health services at a cost commensurate with income of rural families.

B. We urge that the A. F. B. F. support the principles of group medicine and hospitalization on a cooperative basis.

C. We declare our willingness to cooperate with recognized public health agencies in the pursuit of positive health standards, rural and urban.

Local Farm Bureaus are at present negotiating with hospital associations to obtain benefits under the group hospitalization plan, Missouri, Minnesota and Arkansas having reported such activities. In Los Angeles the local Farm Bureaus have contracted with a large medical group for both hospital and medical care on a monthly prepayment plan. According to a report this arrangement has proved very satisfactory to these farm women who find it difficult to understand why such a prepayment plan, to them so desirable, cannot be extended to other localities.

While the problem is too complex for early solution because it is largely local in scope, it is hoped that, through continued cooperation with this group, further study of the many problems involved will result in improvement of medical service to rural areas.

This committee in previous reports has called attention to the necessity of local or county societies giving consideration to the problem that is present in their community. The statement is repeatedly made that charges made in rural communities are

still based on mileage in such a manner as to exceed the charges made for like service in urban communities. This may not apply to all rural districts but still constitutes a matter of major complaint. Solution is not to be found in resolution by this House or the headquarters office of the Association but must be obtained through county societies dealing directly with their farm communities.

Respectfully submitted.

E. H. CARY, Chairman.
F. S. CROCKETT.
C. B. WRIGHT.
R. L. SENSENICH.
J. H. J. UPHAM.

Report of Reference Committee on Hygiene and Public Health

Dr. H. B. Everett, Chairman, presented the following report:

1. Resolution on Traveling Hall of Health: While your reference committee favors such advancement enterprises as are described in this resolution, it seems best to recommend that the resolution be referred to the Board of Trustees for consideration and with authority to develop such exhibits if in its judgment they may be produced and managed without undue expense to the Association.

2. Resolutions on Controlled Animal Experimentation: Your reference committee recommends the adoption of these resolutions with slight changes in wording.

3. Resolutions with Respect to Consideration of Butter by Council on Foods, submitted by Dr. J. Gurney Taylor, Wisconsin, and Dr. Fred Moore, Iowa: Your reference committee finds merit in both these resolutions and recommends that the House of Delegates request the Council on Foods to reestablish suitable standards for the acceptance of butter and the advertising associated therewith, and also recommends that the House of Delegates request the Council on Foods to scrutinize carefully the advertising of accepted brands of oleomargarine or butter substitutes to the end that no improper or extravagant claims of nutritional value be associated with the printing of the seal of acceptance of the Council on Foods of the American Medical Association.

4. Resolutions Requesting a Study of American Spas: Your reference committee, before dealing with these resolutions, ascertained from Dr. Morris Fishbein, Editor of THE JOURNAL, that a list of resorts is now being compiled at the office of the American Medical Association. Your reference committee, therefore, sees no advantage in acting on these resolutions.

Respectfully submitted.

H. B. EVERETT, Chairman.
CHARLES H. GOODRICH.
J. F. HASSIG.
JOSEPH F. SMITH.
CHARLES S. SKAGGS.

On motion of Dr. Everett, seconded by Dr. Felix P. Miller, Texas, and carried, the first section of the report of the reference committee was adopted.

The second section of the report of the reference committee was, on recommendation of Dr. Arthur J. Bedell, Section on Ophthalmology, referred back to the reference committee for revision, for deletion of many repetitive expressions in the resolutions and for making a further report.

Dr. Everett moved that the third section of the report of the reference committee be adopted. The motion was seconded by Dr. A. T. McCormack, Kentucky, and carried after discussion.

It was moved by Dr. Everett, seconded by Dr. A. T. McCormack, Kentucky, and carried, that the fourth section of the report be adopted.

On motion of Dr. Everett, seconded by Dr. A. T. McCormack, Kentucky, and carried, the report of the reference committee was adopted as a whole with the exception of the portion of the report that was referred back to the reference committee.

Report of the Reference Committee on Miscellaneous Business

The Vice Speaker, Dr. H. H. Shoulders, took the chair and called for the report of the Reference Committee on Miscellaneous Business.

Dr. Fred Moore, Chairman, presented the following report:

1. Resolution on Rockefeller Cancer Control Fund: Your committee approves of the principles suggested, provided the majority of the Advisory Council is composed of physicians who are members of the American Medical Association and provided, further, that the work be limited to the treatment of cancer as indicated in this resolution.

2. Resolution on Sulfanilamide: Your committee approves the resolution presented by Dr. Burt R. Shurly, Section on Laryngology, Otolaryngology and Rhinology, regarding the sale and use of sulfanilamide.

3. Resolution on Fee Schedules: This resolution, presented by Dr. Charles W. Roberts, Georgia, is very broad in its scope and involves all the questions which may develop from consideration of fee schedules. The resolution requests that the subject be "examined by an appropriate agency of the American Medical Association, to the end that the Association may declare itself on certain controversial points." Your committee believes that such a study should be made and recommends that this resolution be referred to the Bureau of Medical Economics for the conduct of such study. It further recommends that the Bureau of Medical Economics be instructed to submit its report to this House of Delegates at the next annual session.

Respectfully submitted.

FRED MOORE, Chairman.
E. S. HAMILTON.
WALT P. CONAWAY.
F. S. CROCKETT.
E. L. HENDERSON.

On motions of Dr. Moore, duly seconded and carried after discussion, the report of the reference committee was adopted section by section and as a whole.

Address of Past President Hubert Work

Dr. N. B. Van Etten, Speaker, presented to the House Dr. Hubert Work, Past President of the Association, who addressed the House as follows:

Mr. Speaker and Members of the House of Delegates:

When the Sergeant-at-Arms, Holman Taylor, arrested me in the corner and confronted me, the only thing I could think of to say was to cry out "Does no one here know Rip Van Winkle?" But some one evidently did and I thank you, Mr. Speaker, for the opportunity to look these men in the face again. It recalls many old and many pleasant memories. For four years I stood before you and as I remarked to a friend when a motion was defeated recently, "They can't put it over the House of Delegates, because I tried it for four years and never succeeded."

Report of Reference Committee on Amendments to the Constitution and By-Laws

The Speaker, Dr. N. B. Van Etten, resumed the Chair.

Dr. Henry A. Luce, Chairman, presented the following report:

REPORT OF JUDICIAL COUNCIL

Your Reference Committee on Amendments to the Constitution and By-Laws has studied with pride the report of the Judicial Council and commends the activities of the Judicial Council for its luminous and splendid work as evidenced by its clearcut and forcible report, as illustrated under the headings "Discipline by Resolutions," "Study of Constitutions and By-Laws," "Rental of Radium," "Physicians and Cultists" and "Finality of State Action."

Association of Physicians and Cultists: Your committee wishes to endorse emphatically that part of the report of the Judicial Council pertaining to the association of physicians and cultists and to state that it is the feeling of your committee that this should be incorporated as a firm principle governing the course of action of physicians generally.

Your committee further suggests that this part of the report is sufficiently important to be brought to the attention of the

officers of the various state medical associations, with the request that this matter be brought to the attention of their respective general assemblies.

Rental of Radium: There was an objection to the last sentence in that paragraph pertaining to rental of radium, which the committee considered most carefully. After due consideration of the matter, your committee feels that the phraseology should remain. Any exceptions to the general principle involved would defeat its purpose.

Study of Constitutions and By-Laws: In view of the rapidly changing conditions of medical practice, that portion of the report of the Judicial Council dealing with the study of the constitutions and by-laws is of utmost importance. The recommendation made in the report regarding the supervision of various types of medical care by the state society is especially to be stressed as is the fact that the constitutions and by-laws of the component county societies should conform with those of the state society.

It is further recommended that the constituent state organizations consult with the Judicial Council in such cases when changes in the constitutions are deemed necessary.

PROPOSED AMENDMENTS TO THE CONSTITUTION AND BY-LAWS

Your committee approves the adoption of the following recommendation from the Chairman of the Council on Scientific Assembly:

Amend Chapter IX, Section 3, of the By-Laws by adding to the end of item (6) the following: "and with the cooperation of the section officers to combine section programs and to arrange such other changes as may seem advisable," in order that when so amended Chapter IX, Section 3, item (6) will read as follows: "(6) to arrange the programs for the general meetings of the Scientific Assembly and with the cooperation of the section officers to combine section programs and to arrange such other changes as may seem advisable."

Change in name of Bureau of Health and Public Instruction: That matter referred to the committee relative to the proposed change in name of the Bureau of Health and Public Instruction to the Bureau of Health Education has been approved by your committee, which recommends that Chapter VI, Section 2, be amended to read as follows:

SEC. 2. To ESTABLISH BUREAU OF HEALTH EDUCATION.—The Board of Trustees shall establish a bureau, to be known as the Bureau of Health Education, to carry on such activities in the field of health and the dissemination of information in relation thereto as the House of Delegates may direct or the Board of Trustees, in the absence of such directions, may determine. (As adopted, 1923, and amended, 1938.)

Your committee recommends to the House of Delegates the adoption of the proposed amendment to the Constitution as set forth in the following resolution submitted at the annual session of the Association held in Atlantic City in 1937 by the Judicial Council:

WHEREAS, The Constitution and the By-Laws refer to the election annually of a President and President-Elect when in fact only a President-Elect is elected; and

WHEREAS, No provision is made in the Constitution and By-Laws for a succession in office in case of death or disability of the President-Elect; he it

Resolved, That article 6, section 2, of the Constitution be amended to read: "(a) The President-Elect shall be elected annually. He shall serve as President-Elect until the annual session of the Association next ensuing after his election and shall become President on his installation in the course of that session, serving thereafter as President until the next following annual session and the installation of his successor. If the President-Elect dies, resigns or, in the judgment of the Board of Trustees, confirmed by the House of Delegates, is permanently disqualified for the performance of the duties of his office by any just cause, the Vice President shall become President-Elect and in due course succeed to the presidency, with all of the prerogatives and duties pertaining to that office, as fully as if elected to it in the first instance: Provided, however, that the President-Elect who is elected at the annual session of the Association in 1937 shall, notwithstanding his election as such for the period of one year only, be installed as President in the course of the session in 1938 and continue as such until the session in 1939 and the installation of his successor.

(b) A Vice President, a Secretary, a Treasurer, and a Speaker and a Vice Speaker of the House of Delegates shall be elected, each to serve for one year and until his successor is elected and installed: Provided, however, that in event of the death, resignation or removal, or of the permanent disability of the President-Elect as determined by the Board of Trustees, the Vice President shall succeed to the office of President-Elect and in due course to the office of President, notwithstanding the fact that he was in the first instance elected as Vice President for one year only

Changes in By-Laws proposed by Michigan State Medical Society: Relative to the proposed changes in the By-Laws as introduced to the House at the request of the executive committee of the Michigan State Medical Society and referred to this committee, your committee feels that the motivation of this proposal is comparable to that which led to the introduction of the resolutions presented by Dr. Lyell C. Kinney, California. Your committee requests permission to delay the report on this particular portion until the Thursday meeting of the House of Delegates, and requests that the House authorize the committees to which these resolutions and changes were referred to meet in a joint meeting for the determination of the group thinking on this important matter.

Respectfully submitted.

H. A. LUCE, Chairman.
HERBERT L. BRYANS.
GEORGE P. JOHNSTON.
CHARLES J. WHALEN.
RAYMOND L. ZECH.

On motions of Dr. Luce, duly seconded and carried after discussion, the report of the reference committee was adopted section by section.

On motion of Dr. Luce, seconded by Dr. J. Gurney Taylor, Wisconsin, and carried, the amendments to the Constitution and By-Laws as recommended in the report of the reference committee were adopted unanimously.

Dr. Luce moved that the House authorize the respective committees referred to in the section of the report of the reference committee referring to the changes in the By-Laws proposed by the Michigan State Medical Society to meet jointly and bring in a combined report. The motion was seconded by Dr. John Z. Brown Sr., Utah, and carried.

Report of Reference Committee on Reports of Officers

The Vice Speaker, Dr. H. H. Shoulders, took the chair and called for the report of the Reference Committee on Reports of Officers.

Dr. J. N. Baker, Chairman, presented the following report:

Your Reference Committee on Reports of Officers, after reviewing these addresses to the Association, has pleasure in submitting the following report:

1. The Address of the President: The President, after an arduous year of service to the Association in visitation of state and district medical groups throughout all sections of the country, crystallizes, in concrete fashion, certain impressions gained through these many contacts.

He first directs attention to the avidity of the general membership for self improvement in medical knowledge, as manifested by the ever mounting number of scientific medical societies. He wisely points to the need for caution, on the part of purely scientific medical groups or their chosen officers, in any pronouncement on questions of medical polity affecting the entire profession. Your committee feels that the official machinery for organized medicine through which all questions of national policy and of ethics should rightfully clear, is the House of Delegates of the American Medical Association, and that it is incumbent on this body to preserve the truly democratic spirit in which this organization has been conceived, alike in its own deliberations, in the behavior of its chosen officials and in the conduct of its official mouthpiece—*THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*. In these troublous times of social unrest there is real need, on organized medicine's part, for a tolerant attitude of openmindedness, which should ultimately lead to less internal discord and to a more wholesome appreciation, on the public's part, of the high ideals and principles of our profession.

Other impressions received through the President's many contacts have been an awakened interest within the profession in all socio-economic problems now confronting society, together with an avowed and determined purpose to see to it that organized medicine proves no laggard in contributing a full share toward their solution.

The President closes his thoughtful address by making an earnest plea for full and whole-hearted cooperation by the entire medical profession in the nationwide campaign now in the offing against that ubiquitous enemy of mankind, syphilis.

2. Address of the President-Elect: The President-Elect, without wastage of time or words in felicitous salutation, embarks forthright on a brief yet lucid presentation of two topics of paramount concern to the members of this organization.

The first is the need, in these critical times of social instability and readjustment, for the preservation of the ethical principles of medical practice, evolved through centuries of mankind's murky gropings to higher intellectual and social levels. These intangibles, while difficult of comprehension by the lay mind, constitute real and vital things and are the heritages and traditions of an ancient and honorable profession. He views with enthusiasm and deep concern the nationwide survey of medical needs now being prosecuted by state and county medical societies under the leadership of the American Medical Association. Out of such a study, seriously and earnestly made by doctors, your President-Elect feels, should come a wealth of material bearing on the social and economic factors within a given state or community, which, when known, should lead to a clearer definition of the problem of medical needs and to sounder recommendations on the part of the medical profession in meeting existing needs. It is further pointed out that while physicians continue to contribute freely of their time and talent to charity—estimated to be approximately a million dollars daily—yet the indigent and semi-indigent medical load continues to grow apace, and that the information gleaned from this survey should lead to plans for solution in consonance with the basic principles of sound medical practice.

The second topic stressed by the President-Elect is that of graduate medical education, both for the perfection of specialists in the several fields of medicine and for the continuing improvement of the general practitioner, the aggregate of whom constitutes medicine's first line of defense. He commends the untiring efforts now being put forth in this field both by the state and by county medical societies, guided and stimulated by this Association, and makes an urgent plea for an ever widening expansion of these refresher courses for physicians so circumstanced as not to be able to procure these advantages in the larger teaching centers.

3. Address of the Speaker: The Speaker, by way of introduction and in order to point the moral for the need of knowing one's business, lifts from Aesop's fables the story of the elephant which attempted to play the part of a mother bird.

Then follows a series of searching and pertinent questions over which every physician will do well to ponder: "Are we properly mixing our sociology with our medicine?" "Are we really altruistic or are we dominated by a mass of individual economic desires?" "Do we, or do we not, correctly interpret the opinions of the medical profession of the United States?"

Having propounded these and other timely questions, he points to the great responsibility resting on this body, the House of Delegates, which constitutes the legal machinery and which serves as the official mouthpiece of orthodox medicine throughout the nation. "On your shoulders," he says, "rests the fate of American medicine."

He then makes an earnest plea that this body assume a statesmanlike attitude toward all the manifold problems presented by modern-day society and that it dedicate itself anew in efforts to aid in their solution.

Your reference committee feels that the counsel contained in this message is so timely and of such importance, not only to the members of this body but also to every practicing physician that it recommends that the matter be given a conspicuous place in *THE JOURNAL OF THE ASSOCIATION*.

Your reference committee finds that these addresses, while brief and concise, are scholarly, timely and of a high order of excellence, and commends them to the careful reading of the Association's entire membership.

Respectfully submitted.

J. N. BAKER, Chairman.
ELDRIDGE J. BEST.
BEN R. MCCLELLAN.
RICHARD H. MILLER.
ARTHUR C. MORGAN.

On motions of Dr. Baker, duly seconded and carried after discussion, the report of the Reference Committee on Reports of Officers was adopted section by section and as a whole.

NEW BUSINESS

Resolution on Teaching in Schools of Chiroprody

Dr. G. Henry Mundt, Illinois, presented the following resolution, which was referred to the Judicial Council:

WHEREAS, The American Medical Association has declared it unethical for members to teach in schools of optometry; and

WHEREAS, In the annual report of the Judicial Council of the American Medical Association we find these words: "Teaching in cultist schools and addressing cultist societies is even more reprehensible, for such activities give public approval by the medical profession to a system of healing known to the profession to be substandard, incorrect and harmful to the people because of its deficiencies"; and

WHEREAS, Members of the American Medical Association are now serving on the faculties of schools of chiroprody; therefore he it

Resolved, That the House of Delegates of the American Medical Association deems such practice unethical.

Resolutions on Services of Section Delegates

Dr. Charles W. Roberts, Georgia, presented the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

WHEREAS, There are multiplying evidences of the zeal exemplified by the delegates from the sections in preserving and interpreting to the various special societies in which they hold membership the policies and principles of the House of Delegates of the American Medical Association; and

WHEREAS, There is need in this critical period for wide recognition of the fact that the House of Delegates of the American Medical Association is the only body in this country entitled by election on a democratic basis to speak in the name of American medicine on the questions of social, economic, ethical and clinical relations of the doctor to the delivery of medical care; and

WHEREAS, These noteworthy activities of the delegates for the sections in the aforementioned fields are worthy of emulation by all delegates in their relations to medical societies composed of but not sponsored by organized medicine; therefore be it

Resolved, That the House of Delegates express to the delegates from the sections its appreciation of their constructive services to the Association; and he it further

Resolved, That they and all other delegates be encouraged to continue their efforts to the end that the quality of medical service to the American people may be preserved.

Resolution Dealing with Alcoholic Intoxication

Dr. Thomas F. Thornton, Iowa, presented the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

WHEREAS, The medical and legal professions, the courts and the public have been repeatedly unable to determine legally the sobriety or the degree of intoxication of individuals accused of violating the established rules and laws of safety; and

WHEREAS, Such inefficient methods of clinical and laboratory diagnosis and legal procedures are unscientific and a direct cause of much unnecessary expense, litigation and suffering and directly encourage minor verdicts for major offenses; therefore be it

Resolved, That the executive council of the Iowa State Medical Society ask the cooperation of the American Medical Association in a study looking toward the determination of definite, legally acceptable, scientific clinical and laboratory tests for alcoholic intoxication by

1. Studying and recommending such clinical and laboratory tests as have proved successful in Europe and in this country;

2. Prescribing a standard of qualifications of the persons, laboratories and hospitals taking and making these tests;

3. Suggesting such legislation as may be necessary to establish these clinical and laboratory tests;

4. Coordinating the medical and legal profession with the various police agencies and safety councils in this activity; and

5. Suggesting adequate financial support from such funds as may be available from the liquor license tax or elsewhere to supply equipment necessary to taking and making such tests.

Resolution Approving in Principle the Indiana Plan of Health Education and Preventive Medicine

Dr. H. G. Hamcr, Indiana, presented the following resolution, which was referred to the Reference Committee on Medical Education:

WHEREAS, A pressing need exists for the development of a national policy on the part of organized medicine to bring the benefits of preventive medicine to all the people; and

WHEREAS, The medical profession, through its local county and state medical societies, already has made tremendous progress in developing programs local in scope; and

WHEREAS, A program of professional and lay health education is now functioning successfully in Indiana; and

WHEREAS, The profession in controlling tuberculosis, malaria, typhoid, diarrhea, yellow fever, puerperal sepsis and other infectious diseases has been largely responsible for the present favorable morbidity and mortality rates; and

WHEREAS, It is essential to make preventive medicine an integral part of organized medicine and individual private practice; and

WHEREAS, In order to put into immediate action at this session of the House a suggestion so ably stated on numerous occasions that "the attention of state and county societies should be drawn to the opportunity of assuming a definite leadership in the respective states and counties and directed with the best ideals of medicine and the best interests of the public"; therefore he it

Resolved, That the House of Delegates of the American Medical Association approves in principle the Indiana plan, a copy of which follows, of health education and preventive medicine and directs the Bureau of Health Education of the American Medical Association to bring this plan to the attention of the medical profession and the lay public through all available channels.

TWO BIRDS WITH ONE STONE (THE TWO BIRDS "DISEASE" AND "SOCIALIZED MEDICINE")

INDIANA SUGGESTS A

WORKABLE PLAN

TO PROTECT THE HEALTH OF THE PEOPLE OF THE UNITED STATES

AN ANTIDOTE FOR STATE MEDICINE

Frequently today the physician finds articles in the press questioning his efficiency and his methods of practice. Such articles accuse him of ignoring preventive medicine in his daily work. He is bewildered and defensive in his attitude, for he feels that he is doing his job well. Even superficial observation will disclose the marked drop in death rate as a result of measures instituted by the medical profession in controlling tuberculosis, malaria, typhoid, diarrhea, yellow fever, puerperal sepsis and other infectious diseases. Preventive medicine is now being practiced by all physicians as private practitioners to some degree. In many parts of the state, county medical units have a definite program. The time is ripe to correlate these scattered activities, survey our local situations, and acquaint the public with the extent of this phase of our work.

Many phases of preventive medicine have advanced by stimulation from outside groups. Drives have been sponsored with much misunderstanding. Preventive medicine has now reached its maturity and should be utilized to the fullest by organized medicine and by the individual doctor. It is futile for one county or state to try to promote this alone. Disease and disaster are not aware of state borders. A national policy on the part of organized medicine is needed now.

Too long have we kept our light under a bushel. It is time to take the offensive. The amount of preventive medicine can be increased by the private practitioner with definite benefit to his community and to himself, and the public will be made to realize that American Medicine is pliable enough to continue as an individualistic enterprise.

Throughout the ages, medicine has adapted itself to social changes. We are now in one of those states of changing social customs and aspirations. The American public looks to organized medicine for leadership. Prevention of disease, early recognition of defects and diseases, reduction of hazards and prolongation of life are the important functions of a physician.

In Indiana we have visualized preventive medicine as a wheel with each spoke representing some important phase. Each phase is featured as a "Topic of the Month" in the *Journal of the Indiana State Medical Association* and is announced or discussed in each county medical society the month the subject is featured. The topic of the month is given support in the press and is discussed by speakers before medical and lay groups.

TOPICS OF THE MONTH

January—Formulation of Plan.

February—Syphilis.

March—Pneumonia.

April—Diphtheria.

May—Maternal and Child Health.

June—Crippled Children.

July—Highway Accidents.

August—Occupational Diseases.

September—Annual Physical Examinations and Heart Disease.

October—Conservation of Eyesight.

November—Tuberculosis.

December—Smallpox.

PURPOSE

To promote aggressive leadership by Organized Medicine in Prevention of Disease and early detection of defects.

To incorporate preventive medicine as an important phase of private practice and of county medical activity.

To promote a National Health Program with emphasis on Prevention of Disease sponsored by the American Medical Association with due regard for local situations.

Our modern age demands cooperative efforts by organized medicine to distribute modern medicine.

DIVIDENDS OR RESULTS

1. Create good will and public approval.
2. Raise general standard of medical practice.
3. Prevent many deaths and much suffering.
4. Give a better ordered life for the doctor.
5. Give a steadier income for the doctor.
6. Intelligent defense against disease is our best defense against government encroachment.

ALTERNATIVE

Noisy and aggressive lay groups will seize leadership and we will trail behind, cloaked with heavy governmental supervision.

SYPHILIS

"No BABY BORN WITH SYPHILIS IN INDIANA BY 1940"
Can be controlled by:

1. Premarital examination including blood test.
2. Blood test early in every pregnancy.
3. Making good treatment available to all.
4. Good laboratory service available to all.
5. Reporting of new cases by name or number to health department.
6. Tracing contacts by trained social investigators.
7. Free distribution of drugs for medically indigent patients.
8. Isolation of infectious, noncooperative cases.
9. Making provision for infectious transient or itinerant.
10. Cooperation of private physicians and public clinics.
11. Developing and popularizing a minimum standard of treatment for early syphilis.
12. Continuing the educational program among medical and lay groups.
13. Helping the Negro solve his syphilis problem.
14. Spinal puncture on every treated case.
15. Spending the syphilis dollar where it counts.

PNEUMONIA

1. Leadership by the medical profession in developing a complete pneumonia program for all the people.

2. Recognition by the physician of the importance of early diagnosis and early treatment of pneumonia and the use of life-saving types of serum.

3. Development of facilities so that typing may be done within four to six hours.

4. Appointment of committees by state and county medical societies for special studies in pneumonia.

5. Adequate nursing care for home cases.

6. Development of adequate hospital facilities.

7. Education of the public as to the gravity of the whole pneumonia problem, and the fact that the common cold often is an antecedent for pneumonia.

8. Education of the public as to what may be expected if pneumonia is properly handled.

9. Formation of serum "banks" in order to supply serum immediately and free to the indigent or on proper credit to those who are solvent but incapacitated.

10. Try to lower the cost of present forms of treatment.

11. Usual well established supportive treatment indicated in addition to serum treatment.

12. Teach the physicians generally the importance of early typing of every suspected pneumonia.

DIPHTHERIA

1. Immunization of every child at 1 year of age by family doctor.

2. Accomplished by following plan:

When child is 1 year of age local health officer sends a double postcard to the parents stating that it is the judgment of organized medicine and health authorities that now is the time to immunize the child against diphtheria and to see the family doctor at once. When the injections have been completed the doctor returns the second half of the card to the health officer.

If immunization of the child is impractical from the standpoint of (1) finances, (2) moved away, (3) death of child, (4) religious objection of parents, the parents are asked to check and return. The medically indigent are handled according to the customs of the community.

3. When child enters school he receives a Schick test or another injection of toxoid.

No Drives—No Misunderstandings—Constant Pressure

MATERNAL AND CHILD-HEALTH

"SAFE MATERNITY—HEALTHY CHILDREN"

1. Good antepartum care available to all.
2. Nursing assistance at home deliveries.
3. Continued study of the causes of maternal and infant mortality by organized medicine.
4. Inquiry as to cause of each individual death by the state committee and hospital staff.
5. Immunization program for all children.
6. School health programs—physical health education—distribution of literature on health.
7. County public health nursing program under medical advisory committees of local counties.
8. Mental hygiene program for children.
9. Dental educational and reconstruction program.
10. Postgraduate work for physicians, dentists and nurses.

CRIPPLED CHILDREN

"CORRECT REMEDIAL DEFECTS EARLY"

1. Include in birth certificates the presence or absence of congenital defects.
2. Cooperation of state medical association through advisory committee.
3. Nurses contact physicians, who report cases.
4. Early consultation made available to all.
5. Children treated in approved hospital near home if possible.
6. Schools for crippled children in the larger cities.
7. Reciprocal arrangements between states for transient crippled child.
8. Find and offer aid to the older crippled child.

HIGHWAY ACCIDENTS

1. A study by organized medicine of the causes of death from highway accidents.
2. Assist the law enforcement agencies in reducing the hazards of the careless and drinking driver.
3. Aptitude test on the repeating offenders.
4. Probationary period for young drivers.
5. Cooperate with the American Red Cross in first aid instruction.
6. Filling station attendants to be given instruction in first aid.
7. Develop protection for the doctors and hospitals from irresponsible injured.

OCCUPATIONAL DISEASES

Occupational diseases form approximately 2 per cent of the total disability from industrial causes.

1. Assist employers to cope with employees' health problems with cooperative attitude on the part of the medical profession.
2. Preemployment thorough physical examination.
3. Periodic health examination. (If routine blood tests are made on the employees, treat—don't fire.)
4. Majority of occupational diseases are skin infections, many of which are preventable.
5. Patch testing of employees in occupations producing dermatitis will greatly decrease illness.
6. Teamwork of industrial physician and general practitioner is very desirable.
7. Industrial physician should direct patients with diseases other than those resulting from employment into the channels of ordinary practice.
8. Find the job that best fits the employee physically.
9. Use existing hospital facilities as much as possible.

ANNUAL PHYSICAL EXAMINATION AND HEART DISEASE

1. Educate physicians in better recognition of heart disease.
2. Teach the newer methods of studying functional capacity of the heart.
3. Teach the seriousness of "mild" infections as a background for heart crippling.
4. Teach the role of weight, heredity and environment in the production of hypertension.
5. Educate the physician and layman as to the seriousness of rheumatic infections.
6. Continue to emphasize the role played by syphilis in the problem of heart disease.
7. Train heart cripples of all ages in pursuits that permit them to accommodate their defects.
8. Educate physicians and the public in the importance of periodic examinations.
9. Urge the need for careful periodic examinations after middle life.
10. Stress the need for certain laboratory and x-ray studies at regular intervals: urinalysis, serologic, electrocardiographic and similar laboratory procedures.

CONSERVATION OF EYESIGHT

1. Ophthalmia Neonatorum. Prevent by prompt instillation of silver nitrate, 1 per cent or 2 per cent solution, into the eyes of the newborn.
2. Squint or crossed eyes. Begin treatment not later than age 2.
3. Discourage the use of high explosive fireworks in the hands of children. Reduce fourth of July eye injuries.
4. Examination of school children for visual defects.
5. Avoid eyestrain. A. Correct visual defects. B. Prevent and treat diseases of the eye. C. Install proper lighting. D. Reasonable use of the eyes according to effects of use.
6. Help reduce hazards from industrial accidents.
7. Early detection and treatment of syphilis will reduce blindness.
8. Wipe out trachoma in Indiana.

TUBERCULOSIS

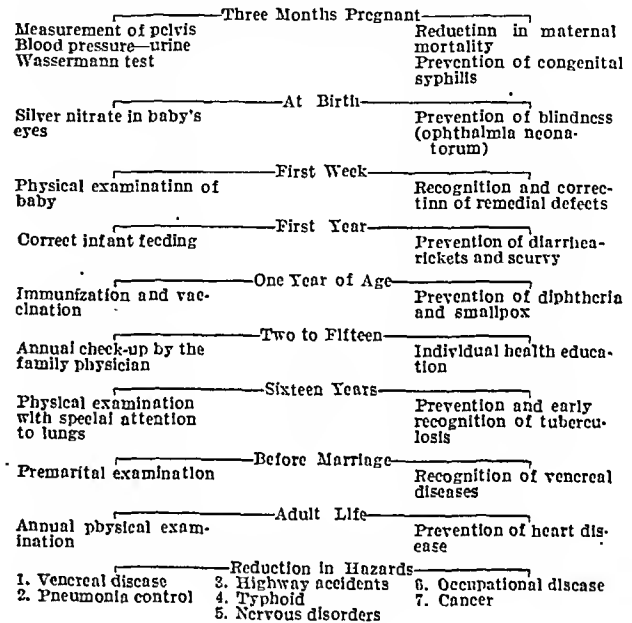
1. Physical examination of every child at age 16, including tuberculin test.
2. Thorough physical examination on entering college or industry.
3. Examination of all nurses on entering training and recheck at regular intervals.
4. X-ray available for positive reactors.
5. Trace contacts and examine.
6. Protect the community from infectious cases by adequate number of hospital beds.

7. Concentration on detection of early cases.
8. Cooperation with antituberculosis association and public health nursing organizations.
9. Continue educational program in high schools.
10. Use collapse therapy when indicated.
11. Rehabilitation program.

SMALLPOX

1. Vaccinate every child at age of 1 year after completion of diphtheria immunization.
 2. Vaccinate again on entering grade school and thereafter at regular intervals by the family doctor.
- Extend the scope of preventive medicine to include other infectious diseases and metabolic disturbances as methods are proved to control them.

THE INDIVIDUAL'S MEDICAL SERVICE CHART THROUGH LIFE



Bureau of Publicity
Indiana State Medical Association
1021 Hume-Mansur Building
Indianapolis, Indiana

Resolution Requesting that Editor of The Journal Be Instructed to Confine His Writings to Official Publications of American Medical Association

Dr. Spencer T. Snedecor, New Jersey, presented the following resolution, which was referred to the Reference Committee on Executive Session:

WHEREAS, The Editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION is accepted and referred to by the press of the nation as the spokesman of organized medicine; and

WHEREAS, The said Editor conducts a column in the daily press that advises as to health; and

WHEREAS, The said Editor has edited a "Modern Home Medical Adviser," the newspaper advertisement of which claims "money could not buy better health guidance"; and

WHEREAS, The said Editor has admitted he has control over the advertising of this book; therefore be it

Resolved, That the Delegates from New Jersey to the American Medical Association are hereby instructed to introduce a motion into the House of Delegates of the American Medical Association requesting the Board of Trustees of the American Medical Association to instruct said Editor to confine his writings to the official publications of the American Medical Association.

Greetings from Organizations

The Secretary announced that a number of greetings had been received, only two of which were in the form of formal presentation. The Secretary read the two formal messages, the first a telegram from the North American Record Librarians and the second a letter from the president of the Judiciary

Board of the California State Conference of the Bricklayers, Masons and Plasterers of the International Union of America, as follows:

1. North American Record Librarians send heartiest greetings for successful convention. JENNIE C. JONES, President.

2. Trusting your convention and visit to San Francisco and California will be of great benefit to mankind, as well as a satisfaction and pleasure to yourselves. Sincerely, L. C. (HARRY) BLUM.

Attendance at Executive Session

The Speaker announced that when the House reconvenes it will do so in Executive Session and that no one will be admitted except the members of the House and, unless there be objection, the presidents and secretaries of constituent state medical associations and the executive secretaries and employees of the headquarters staff.

On motion of Dr. John Z. Brown Sr., Utah, seconded by Dr. George W. Kosmak, New York, and carried, Dr. Horace Reed, alternate delegate from Oklahoma, was invited to attend the Executive Session.

It was moved by Dr. George W. Kosmak, New York, seconded by Dr. John Z. Brown Sr., Utah, and carried, that when the House recess it do so to meet at 2 p. m.

Dr. Arthur J. Bedell, Section on Ophthalmology, moved that the representative of the Canadian Medical Association and the representative of the New Zealand Branch of the British Medical Association appear on Thursday, June 16, to present greetings. The motion was seconded by Dr. H. B. Everett, Tennessee, and carried.

The House recessed at 12:15 p. m. to reconvene in Executive Session at 2 p. m.

Executive Session—Tuesday Afternoon, June 14

The House of Delegates was called to order by the Speaker, Dr. N. B. Van Etten.

The Sergeants-at-Arms polled the House, after which the House went into Executive Session at 2:20 p. m.

Action of Committee of the Whole on Resolution Relative to Editor's Writings

Dr. Frederic E. Sondern, New York, asked whether the Reference Committee on Executive Session was ready to report on the resolution introduced from New Jersey relative to the Editor of *THE JOURNAL* and was informed by Dr. J. D. Brook, Chairman of the Reference Committee on Executive Session, that that committee had had no opportunity to consider the resolution nor to grant a hearing to the New Jersey delegation, which had been requested, and could not therefore report at the present time.

Dr. Sondern then moved that the resolution be considered by the House at once because of the importance and urgency of the matter, and that it be considered by the House as a Committee of the Whole. The motion was seconded by Dr. Charles W. Roberts, Georgia, and Dr. Arthur J. Bedell, Section on Ophthalmology, and carried after discussion by Drs. Spencer T. Snedecor, New Jersey; Charles Gordon Heyd, Council on Medical Education and Hospitals, and Morris Fishbein, Editor of *THE JOURNAL*.

Dr. Sondern then moved that this matter be withdrawn from the Reference Committee on Executive Session so that it could be considered by the House, and the motion was seconded by Dr. George W. Kosmak, New York, and carried.

Dr. Sondern further moved that the House of Delegates resolve itself into a Committee of the Whole for greater freedom of debate. Dr. James E. Paullin, Section on Practice of Medicine, seconded the motion and it was carried.

The House of Delegates resolved itself into a Committee of the Whole at 2:28 p. m., with Dr. Frederic E. Sondern, New York, presiding.

The House reconvened in Executive Session at 3:10 p. m., with the Speaker, Dr. N. B. Van Etten, in the Chair.

Dr. Frederic E. Sondern, Chairman, presented the following report:

The Committee of the Whole recommends that the House of Delegates express its complete confidence in and respect for the Editor of *THE JOURNAL OF THE AMERICAN MEDICAL*

ASSOCIATION and bid him godspeed in going forward in the splendid work he is doing.

The Committee of the Whole recommends that the resolution introduced from New Jersey relative to the Editor of *THE JOURNAL* be defeated.

Dr. Sondern moved that the first recommendation of the Committee of the Whole, expressing confidence in and respect for the Editor, be adopted, and the motion was seconded and carried unanimously.

On motion of Dr. Sondern, seconded by Dr. A. T. McCormack, Kentucky, and carried by a rising vote which was unanimous, the House approved the second section of the report of the Committee of the Whole rejecting the resolution introduced from New Jersey.

Special Committee on Publicity

The Speaker appointed the following delegates as a Special Committee on Publicity to censor the publicity emerging from the discussions of the afternoon meeting of the House: Dr. W. H. Seemann, Louisiana, Chairman; Dr. Lewis B. Bates, Isthmian Canal Zone, and Dr. Edgar A. Hines, South Carolina.

Address Prepared by Miss Josephine Roche

Dr. Olin West, Secretary, stated that Miss Josephine Roche, Chairman of the Interdepartmental Committee to Co-ordinate Health and Welfare Activities of the Federal Government, had accepted an invitation forwarded to her on instructions from the Board of Trustees to discuss the work and plans of the committee of which she is chairman, but stated that there was a possibility that she could not attend, and later the following telegram was received:

I deeply regret commitments mentioned in my letter of June 4 make it impossible to be with you to address the House of Delegates on Tuesday, June 14. No other member Interdepartmental Committee available.

The Secretary stated further that he had since received the following message from Miss Roche:

I have talked with the Surgeon General of the United States Public Health Service and he is asking Dr. Warren F. Draper (a member of this House of Delegates) to be ready to read my paper on the work of the Interdepartmental Committee if your Board of Trustees wishes this done. I cannot tell you how disappointed I am not to meet with you and how very much your courtesy is and will continue to be appreciated.

Dr. Warren F. Draper, United States Public Health Service, read the following address submitted by Miss Josephine Roche, which was referred to the Reference Committee on Executive Session, which was asked to retire at once and if possible bring back a report so that it might be considered immediately:

The Interdepartmental Committee was created in August 1935, following the passage of the Social Security Act, in order that the full benefits of the varied federal program under the act's provisions might reach with minimum delay and maximum effectiveness the individual men, women and children for whose aid and service the program was brought into existence. Obviously, duplication of work and effort, conflict in policy or procedure among federal agencies had to be prevented, and common understanding and action developed if the values of the program were to be translated quickly into realities.

As members of this committee, the President designated four assistant secretaries of government departments—the Treasury, Interior, Agriculture and Labor—and the chairman of the Social Security Board.

The committee's first task was the setting up of technical committees to work out immediately cooperative agreements between federal agencies functioning together in the states. Two may be used as illustrations: the agreement between the United States Public Health Service and the Children's Bureau on public health nursing, and the agreement between the United States Public Health Service and the Division of Labor Standards, on industrial hygiene.

The technical committee of Children's Bureau and United States Public Health Service representatives worked out an agreement defining the objectives, setting standards of service, and committing both the Children's Bureau and the Public Health Service to a joint approach to the various state health departments, so that efforts of the two agencies should not be retarded by any duplication of effort or multiplicity of super-

vising units, with the inevitable misunderstandings and confusion in the field which would result.

The industrial hygiene agreement was the result of a desire on the part of the Department of Labor and the Public Health Service to promote in the states the establishment of industrial hygiene units in the state health departments which would cooperate with the state labor agencies in the pursuance of the common objective—protection of the working population from industrial health hazards.

Other technical committees working out similar interdepartmental agreements for administrative coordination are those on crippled children and the needy blind.

While there has not been, of course, 100 per cent success in eliminating duplication of effort and competition between interested agencies in the states, we are convinced that the three years experience has evolved a useful and unique mechanism for coordinated procedure: useful in that technical groups may meet together and, through conference and interchange of experience, approach mutual understanding and agreement based on a solid foundation of fact; unique in its simple combination of facilities to provide direct administrative action when technical groups have determined the procedures through which harmony of action may be achieved.

Working under the instruction of the executive order "to study and make recommendations concerning specific aspects of the health and welfare activities of the government" are the technical committees on recreation, nutrition, crime prevention and parole, and medical care.

In the work of the last-named committee you have, of course, a special interest, and our interdepartmental committee is deeply grateful and encouraged to know that a number of you, including some of the officers of the American Medical Association, are to be with us at our national health conference July 18, 19 and 20, when the full report of this technical committee will be submitted and discussed.

At the time the Technical Committee on Medical Care was formed the national health survey of the Public Health Service was nearing completion. You are familiar with the results of that survey, covering, as it did, some 800,000 families, including 2,800,000 persons, and supplemented by reports from physicians, health officers, and institutions providing medical services. This survey made it possible to measure health needs quantitatively and to determine the degree of correlation among all the factors involved. It provided an index not only to the prevalence of disabling illness for the population as a whole but according to age, sex, occupation, family income, living standard and size of community. It made it possible to weigh these factors in relation to mortality figures as well as to medical and nursing care received and to the availability of hospital facilities.

The overwhelming central fact established by the national health survey is this: that with poverty goes not only a higher rate of sickness but a deficiency of medical care. These correlations were proved not only for the relief group but for struggling families above the level of relief. Many may have considered these facts too obvious to require proof, and certainly they had been supported by innumerable smaller studies. But never before had such a mountain of evidence been assembled to sustain the conclusion that among the poor there is an excess of sickness and death which requires preventive services and medical care proportionately greater than are required in the higher income groups. And never before had it been so convincingly shown that in many areas and localities those economic groups which are most in need of preventive services and medical care are receiving far less of both than are families with larger individual financial resources.

The national health survey irresistibly drew the attention of the interdepartmental committee to the national problems of health and medical care. The Technical Committee on Medical Care was directed to study the results of the national health survey and to correlate with them all other available data on the subject. After more than a year of work the Technical Committee produced a report on "The Need for a National Health Program," which was transmitted to the President last February. Already a part of this report, in which the health needs of the country are stated comprehensively, yet concisely, has been made public; with facts and conditions such as it sets

forth you have long been familiar, through the years of generously contributing your skill and services to the destitute and broken men, women and children who have turned to you for aid in illness and suffering. It is to be hoped we may have graphically given to us by your own survey the full extent of the free services of the medical profession. It would be a good thing for every citizen to realize more clearly the immensity of the philanthropic burden which the members of the medical profession voluntarily assume.

We have the information as to health and medical needs in broad national terms. Your survey should be of great value in amplifying existing data regarding many specific localities and in presenting needs as they are seen in the field by practicing physicians. In this, as in all other fields, it is necessary always to keep in mind the difference between active demand and actual need. Our present picture of the total need may be amplified or modified in detail as further special studies are made. But the report of the Technical Committee on Medical Care, based on all available data—including direct contacts with large numbers of individual citizens as well as with professional groups and agencies—establishes conclusively the existence of grave and far-reaching needs.

Together with you, those of us who have been battling on the economic front against unemployment, starvation wages, indecent housing and utterly inadequate food find nothing new, but only shocking confirmation of the extent to which human and economic waste has been permitted to go on, when we read from the Technical Committee's report on The Need for a National Health Program such facts as the following: On an average day of the year, there are four million or more persons disabled by illness. Every year seventy million sick persons lose over one billion days from work or customary activities. In 1936, nearly a quarter of a million women did not have the advantage of a physician's care at delivery; 15,000 of these were delivered by neighbors or relatives; 223,000 were delivered by midwives, most of whom are untrained and ignorant.

In 1937, of forty-nine state health officers responding to a questionnaire, only two reported the facilities for maternal care in their states as adequate. In large areas and groups of the population the death rates between the second and the twelfth month of infancy are as high as they were for the whole country twenty years ago. Community measures for the control of communicable disease, so necessary in checking the acute infectious diseases of childhood, are inadequate in the greater proportion of rural counties throughout the country.

Each year, 40,000 young adults between the ages of 15 and 45 die from the ravages of tuberculosis. The deaths among these young adults represent about three fifths of all deaths from this cause.

Preliminary results from the national health survey indicate that disabling illness in the relief population occurred in 1935 at an annual rate 47 per cent higher for acute illness and 87 per cent higher for chronic illness than the corresponding rates for families with incomes of \$3,000 and over. The annual days of disability per capita in the relief group were found to be three times as great as among upper income families; the nonrelief population with an income under \$1,000 showed a rate of disability over twice that of the highest income group. One in every twenty family heads in the relief population was unable to work because of chronic disability, as contrasted with only one in 250 heads of families with incomes of \$3,000 and over. Children of relief families experienced 30 per cent greater loss of time from school and usual activities because of illness than did children in families in moderate and comfortable circumstances. Only 70 per cent of the cases of disabling illness among relief persons received medical attendance exclusive of hospital care, compared with a figure of 83 per cent for those with a family income of \$3,000 and over. The average medical services per case of disabling illness were about 50 per cent higher in the highest income group than among persons on relief. Bedside nursing care in the home was given to less than 1 per cent of the disabling illnesses among persons on relief; the proportion so attended in the group with family income of \$3,000 and over was 10 per cent.

These are only a few examples—plucked more or less at random—from the data which we have about the low income

groups of our people. We must keep constantly in mind the fact that approximately fifty million of our population are in families with an annual income of less than \$1,000 a year.

When facts of denial and destruction of human values, such as these I have mentioned, are discussed in terms of the size of the population involved—the tens of millions of men, women and children who are their victims—the problem of providing adequate health and medical services obviously demands concerted public action for its satisfactory solution.

In calling the National Health Conference, the Interdepartmental Committee is carrying out the suggestion of the President that it invite representatives of the interested public and of the medical and other professions to examine the health problems in all their major aspects and to discuss ways and means of dealing with these problems.

The National Health Conference is planned as a working conference. To provide the best opportunity for frank discussion, it is necessary to limit the number of participants, but the Interdepartmental Committee hopes that they will be truly representative of both the professional groups, who have the technical knowledge, and of the general public, which is vitally interested in the distribution and application of this knowledge.

It is hoped that the conference will contribute to two ends: First, a better understanding of national needs in the field of health and medical care. Second, the formulation of policies which will enable the medical and other professions, private organizations, federal, state and local agencies, and individual citizens, to cooperate in efforts to meet these needs.

The Technical Committee on Medical Care will submit to this conference not only its analysis of needs but certain tentative recommendations as to means of meeting them. These recommendations have been submitted to the President, and it is at his suggestion that they will be submitted to the consideration of the National Health Conference. The report deals with several broad problems: First, the need for more comprehensive public health services to combat specific diseases or groups of diseases, such as tuberculosis, the venereal diseases, pneumonia, malaria, cancer and other chronic diseases of middle and old age, mental disease and deficiency, and industrial hazards.

Secondly, the need for expansion of maternal and child health services; the Technical Committee estimates that half the infant deaths and half the maternal deaths could be prevented by the application of the knowledge and skill which your profession now has.

Thirdly, the shortage or unequal geographic distribution of hospitals, clinics, doctors, dentists, nurses and other agencies and trained experts in the field of health and medical care.

Fourthly, means of providing more adequate medical care for recipients of public assistance and other persons of very low income.

Finally, methods of financing the sickness costs of self-supporting persons of limited means.

We do not intend to ask the National Health Conference to take formal action on any part of this report. We hope that none of the groups or individuals participating in the conference will attempt to make premature judgments or urge others to do so. Our purpose is to obtain the frankest discussion of ways and means of dealing with these immense and complex problems. We hope that the participants in the conference and, subsequently, other groups and individuals throughout the country, will give us the full benefit of their knowledge, experiences and ideas.

No one formula or program can possibly be found adequate to meet the varied needs, but a composite of many efforts and plans, some already tested, some in experimental stages, some not yet under way, can and must be found. We believe that, by providing an opportunity for an interchange of views between representatives of the medical and other professions, of various agencies and of the general public, the National Health Conference will dissipate misunderstandings and work toward a meeting of minds on the beginning of a coordinated national health program.

That there will be concerted public action eventually for such a program no one measuring the human needs and denials

can doubt. In this great democracy with its unsurpassed resources and potentialities for human progress, one third of our people are not going indefinitely to remain ill fed, ill housed, ill cared for in sickness. Already they are on the march, and the only question which remains is whether highly specialized groups, experienced and trained in ways and means of meeting human needs, are going courageously and quickly to offer all they can give in constructive and progressive leadership and help in the meeting of the vast human problems of today.

You have your instruments of precision for diagnosis and treatment; your technics for prevention and cure are among the wonders of the modern world. How can we help to bring them to all our people who need them? That is the question which we submit to you today, the question we shall ask at our conference, must go on asking until we find the answer.

Report of Advisory Committee on Supply of Medical Care

Dr. W. F. Braasch, Chairman, presented the following report of the Advisory Committee on Supply of Medical Care, which was adopted on motion of Dr. Braasch, seconded by Dr. George W. Kosmak, New York, and carried:

Widely publicized statements have been made by so-called leaders of medical science, social reformers and welfare politicians to the effect that the need for medical reform was urgent and that immediate radical changes were essential in order to give adequate medical care to countless hundreds who were now being neglected. Estimates of widespread inadequacy of medical care, rated as high as 50 per cent in the indigent groups, made some of us gasp. These claims have gone practically unchallenged except by the organized profession and are still being widely quoted and accepted by press and public. Information concerning the distribution of medical service which has been quietly accumulated in recent years at the headquarters of the American Medical Association was quite contrary to statements emanating from sociologic and welfare groups and from surveys inspired by governmental agencies. The desirability of more accurate data became very evident and, when voiced by the American Public Health Association, the trustees and officers of the American Medical Association lost no time in starting a nationwide survey of the actual supply of medical care. In contrast to previous health surveys made by laymen untrained and ignorant of the intricacies involved, this survey was to be made by the doctor himself.

After thorough preliminary study by the Bureau of Medical Economics and the officers of the Association, it was decided to use the county medical society as the basic unit of the survey. It was not a case of "passing the buck" as was claimed, but it is the only way in which the medical conditions existing in different sections of the country could be determined. It was also decided to include every phase of activity related to medical service, so as to make the survey as complete as possible. For this purpose forms were compiled which, when filled out, should give an exhaustive survey of the entire medical field. Authoritative data concerning the need and supply of medical care will at last be available and we shall now be able to discuss intelligently any inadequacy which may exist.

It is evident that this survey will furnish us not only a great variety of valuable data related to medical care but many by-products of importance as well. We should be able to determine, for example, the following data concerning any deficiency in supply of medical service: its geographic distribution; the type of community, and the social status of the patient involved. We should also discover why these conditions exist, whether public officials or institutions are derelict, and in what respect. It would be most disappointing if from the great mass of data accumulated no suggestions developed to improve the present distribution of medical service. Not the least important will be the effect of the survey on public opinion and incidentally the sympathetic reaction on the part of laymen who have participated in the accumulation of data. Finally, and possibly of greatest importance, this survey should draw the component parts of our Association into closer relationship with activities centered in the Association headquarters.

Every effort has been made by the officers of your Association to publicize and arouse interest in the survey by means of articles in the Organization Section of *THE JOURNAL*, printed information sent to state organizations for distribution, and by individual efforts of the officers and members of the Board of Trustees. Dr. R. G. Leland, Director of the Bureau of Medical Economics, has responded to the requests of numerous state and county societies and in recent months has devoted much time and energy to giving personal aid to its expedition.

An advisory committee was appointed by the Board of Trustees, composed of men from various parts of the country who have been interested in economic affairs. At our initial meeting many of the problems involved were discussed. The members of the committee were unanimous in recognizing the importance of the survey and urged that it be carried out as thoroughly as possible. As might be expected, opinions as to the method of conducting the survey in the various parts of the country were quite different. It was felt that instructions in conducting the survey and in filling out the different forms should not be too didactic. It seemed desirable to let the various sections of the country devise their own methods of procedure. Each member of the Advisory Committee agreed to take an active part in the survey of his own state and also, so far as possible, to lend his efforts in an advisory capacity to the activities in the adjacent states. It was felt that this great attempt to make an inventory of national medical supply should by no means be final and that in some of its phases these efforts should be continuous.

What progress has been made so far? Although the survey has been carried on with enthusiasm in some states, we regret to say that the response in some parts of the country has been lukewarm and in several states very disappointing. There are scattered reports of open hostility and back-sniping on the part of individual members, insinuations that the survey will be worthless and will lay us open to criticism. The latter can happen only if we do not take the survey seriously and cooperate in every way possible.

It has been observed that those states were most successful which had first established a good, working, preliminary organization. The exact form of the organization varied in the different states. In most cases the activities were centralized in the office of the secretary of the state association. In several states general supervision was left to the committee on medical economics, and detailed supervision in the various counties or districts of the state was subdivided among the members of the council or the board of trustees representing these districts. In most counties the details of the survey were in charge of a special committee appointed for this purpose. Contact was made with the county secretaries either by means of bulletins, notices in state medical journals, or personal visits from members of the economics committee, the council or the state secretary. The survey went over best in counties in which a preliminary informatory gathering had preceded distribution of the blanks. Meetings were held in the larger communities of the county, in which a representative group was given personal instruction by officials of the state organization or by the county secretary. In some states statewide and district meetings of county representatives were held and at the gatherings state and national officers, including Dr. Leland himself, gave individual advice. Field work to facilitate the survey throughout the state was carried on by the secretary or other officer of the state association in some areas. In others it was done in conjunction with the chairmen and members of the economics committee or of the council. In one state a group of senior medical students was employed to facilitate the survey.

In order to demonstrate the different methods of organization and the means employed in various states, we suggested that the Bureau of Medical Economics prepare an exhibit in the American Medical Association section of exhibits. We trust that many officers of county and state societies, as well as members of the Association, will avail themselves of this opportunity to profit from experience already had. In addition, the members of the Advisory Committee will be available during the meeting in order to discuss problems in the conduct of the survey which may have appeared in any state or county organization.

The cost of conducting the survey varies widely in different localities. It has been found necessary to devote comparatively little money to it in most of the state associations, averaging only a few hundred dollars. The cost of the survey in the larger communities has been borne by the local county societies, with the assistance of the state medical societies in some instances, and has caused no excessive burden. The expense involved in accumulating and evaluating the various data assembled in the Association headquarters will not be excessive and has already been taken care of by the Board of Trustees. The total expenditure entailed should not be a serious problem and promises to be insignificant in comparison with the value received.

With regard to the various forms, as might be expected, form 1, which deals directly with the physician himself, is criticized most. Confusion arose in the minds of some as to how to answer questions 1, 2 and 3 of this form. Since many physicians did not keep a close record of indigent patients, it was difficult to give an exact answer to these questions. However, it was held by Dr. Leland and others that an approximate estimate of the number of patients treated would suffice. In some places physicians are keeping records for a month or more to get dependable estimates.

It is generally recognized that no large survey can be 100 per cent accurate. Even life insurance companies are unable to make an exact survey. The most we can expect to get will be a pattern or sampling of the medical situation in each county and state. Although it is important that the sampling should be as accurate as possible, it is of equal importance that every physician should do the best he can in filling out the blanks.

In order to increase the accuracy of data from several questions in form 1, it was thought advisable to make a separate spot survey over short periods of time. Accordingly, the Bureau of Economics is sending out record forms to cover these different periods, in July, October and January. These blanks, form 1F, will permit the keeping of an accurate record of patients during those periods.

The importance of answering questions 7 and 9 in form 1 cannot be overemphasized. In fact, the actual value of form 1 would be comparatively little unless these questions were fully considered. We are particularly interested in knowing what the physician's reaction is toward the problems of medical care and what remedies he can suggest for their improvement under the present circumstances.

In large and highly industrialized communities, considerable difficulty arose in filling out form 8. In order to facilitate and simplify the gathering of information, special blanks were prepared by the survey committee in Pennsylvania and in other states. The Bureau of Medical Economics has repeatedly advised the use of additional questions or forms when necessary to acquire a complete understanding of the problem of medical demand and supply. We understand that the blanks sent out to the various institutions and social agencies have been filled out much more promptly and completely than those sent to the physicians themselves. It would be most unfortunate for the success of the survey if this discrepancy should continue.

It cannot be made too emphatic that this is primarily a survey of the practitioners of this country. We are interested in finding out the direct results of their observations and their conclusions as to the supply of medical service. We are not interested so much in the theoretic reforms of many of the so-called leaders of medicine, which in most cases are products of the noble thought and the library table. It is not of great importance to find out what those who are engaged in teaching or cloistered specialists and institutional doctors think about medical care, and we already know what governmental officials and social workers think. The facts of the situation must come from those who are in direct contact with the actual practice of medicine. We must find out from them to what extent reform in medical care is needed and get their opinions as to how it can best be accomplished.

If there ever can be a mandate from the American Medical Association to its members, this survey should be so considered. Now that we are definitely committed to the survey, it is up to us to make good; if we do not, the situation will be most disastrous.

The best advice the advisory committee can give is that each member of the House of Delegates shall individually take on himself the responsibility of the success of the survey in the district that he represents. If you find that the survey is lagging in your district, get after the officers of the backward state or county society and convince them of the great importance of its completion. See to it that effective organization is established at once. Ask the member of the advisory committee or the Board of Trustees in your part of the country, ask Dr. Leland and the officers of the American Medical Association, for their active cooperation, and it will be forthcoming. How many of the members of this House have filled out form 1? If you have not, you should do so immediately. Every one of you should see to it that your county society sends in a return as complete and as quickly as possible.

Gentlemen, this is your survey, not that of any bureau, committee or officer of the Association. It is squarely up to you and your constituents to carry it through successfully. It is no exaggeration to state that this survey may have a profound influence on the future course of American medicine.

Report of Reference Committee on Sections and Section Work

Dr. Robert A. Peers, Chairman, presented the following report, which was adopted on motion of Dr. Peers, seconded by Dr. John Z. Brown Sr., Utah, and carried:

Your Reference Committee on Sections and Section Work has reviewed the program and heartily commends the many practical, authoritative and up-to-date presentations, which cover a wide variety of subjects. It comments especially on the inclusion of some of the diseases peculiar to the Orient, which are of increasing importance because of the rapid methods of travel. This transmission of disease is a medical problem which the members of the Council on Scientific Assembly and the section officers anticipated and, by their foresight, made the members of the Association conscious of these new dangers.

The subjects presented, covering as they do new drugs, recent operations, modern therapeutic measures, glandular therapy, allergic reactions, blood dyscrasias and the excellent symposiums on cancer, syphilis and radiology, emphasize many of the advances made in the past year in clinical medicine.

The report of the Council on Scientific Assembly has been reviewed and your reference committee particularly commends the suggestion of the Council that scientific sections of the Association may combine their sessions when the subjects presented are of mutual interest. To further the attendance at the general scientific meetings and sectional programs, your reference committee would be happy to endorse any activity of the Council on Scientific Assembly that would discourage independent societies from holding their meetings during the sessions of the American Medical Association.

The scientific exhibits maintain the high standards set in previous years and continue to offer to the alert physician the finest and most comprehensive postgraduate instruction obtainable. The individual exhibits are worthy of praise and the subsidized research projects, such as those on fractures and anesthesia, continue to attract a great number of our members. Your committee recommends that these subsidized exhibits of fractures seek the cooperation of other sectional interests. The experimental problems in medicine and surgery as presented in the Scientific Exhibit should have special commendation.

Your reference committee records its appreciation of the work done by this very active Council on Scientific Assembly, the section officers and those officially concerned with the Scientific Exhibit.

Respectfully submitted.

ROBERT A. PEERS,
Chairman.
ARTHUR J. BEDELL.
BURT R. SHURLY.
E. H. SKINNER.
TOM B. THROCKMORTON.

Report of Reference Committee on Medical Education

Dr. William D. Johnson, Chairman, presented the following report, which was adopted on motion of Dr. Johnson, seconded by Dr. J. Newton Hunsberger, Pennsylvania, and carried after discussion:

Your reference committee, having studied the Resolution Approving in Principle the Indiana Plan of Health Education and Preventive Medicine, offered by Dr. H. G. Hamer at the morning session, commends the resolution and moves its adoption.

Respectfully submitted.

WILLIAM D. JOHNSON, Chairman.

Report of Reference Committee on Executive Session

Dr. J. D. Brook, Chairman, presented the following amended report of the Reference Committee on Executive Session and stated that credit for the preparation of that part of the report referring to the address prepared by Miss Roche was due Dr. W. F. Braasch, Minnesota:

1. The resolution concerning the movie film entitled "The Birth of a Baby" presented by Charles W. Roberts, Georgia, suggests three points: (a) its educational value; (b) age limit for showing, and (c) the policy of the House of Delegates on the showing of the film.

To the first question your committee replies by saying that it believes that the film has a definite educational value and that maternal and child welfare endeavors would be enhanced by its release.

To the second question your committee replies by recommending that, as children would obviously fail to comprehend the import of the film, its showing be limited to adults.

In reply to the third question concerning the policy of this House, your committee submits the following: Because the original contract with the producers was such that the film should not be shown except by consent of the county medical society and because of our inalienable belief in "states' rights," your committee labels the question of showing the film a problem of the various state societies and their component county organizations and recommends that it be so handled.

2. Contraception and Venereal Disease Prophylactics: In the report of the Board of Trustees on page 97 of the Handbook appears a statement of fact regarding the passage of laws by four states controlling to some degree the sale or distribution of appliances, drugs and medicinal preparations intended or having special utility for the prevention of conception and venereal diseases. We believe the enactment of these laws is a step in the right direction, as it limits the sale and distribution of contraceptive materials to responsible persons; namely, the physician and the pharmacist.

On pages 142 and 143 of the Handbook is found the Report of the Committee to Study Contraceptive Practices and Related Problems as presented to the Board of Trustees. The committee asks the acceptance of the following statement by the House of Delegates:

It is not the function of the American Medical Association to tell physicians what therapeutic advice they shall offer patients. However, it has been its policy to investigate various procedures, devices and drugs, and to publish the results of such studies in its official publications for the information of the profession.

The instructions to the Council on Pharmacy and Chemistry and the Council on Physical Therapy to investigate further the materials, devices and procedures used for the purpose of contraception do not indicate any change in the usual policy of the Association, nor do they constitute an endorsement by the Association of contraceptive practices.

While there are still some phases of the subject which have not been clarified, particularly as to methods and devices used for contraceptives, your committee endorses the committee's statement and desires to reiterate the stand taken by this house in 1937 that the problem is essentially a medical proposition.

•3. Address prepared by Miss Josephine Roche: Your committee believes that it expresses the sentiment of the House of Delegates in saying that it is glad to have received a communication from the chairman of the Interdepartmental Committee, Miss Josephine Roche. It is particularly welcome since it is the first official communication that the American Medical

Association has received from this important governmental committee.

Your committee notes with interest that the studies have resulted in the coordination of health activities involved in the Public Health Service, in the Department of Labor and in the Children's Bureau. It trusts that future results will bear out the promise of increased efficiency.

Possibly the most interesting data quoted are those which would indicate a much higher rate of sickness in the subeconomic groups. This raises the question whether the economic factor involved is not of greater importance than is the lack of medical care in the cause of illness.

The address contains many interesting statements regarding medical care, some of which are at variance with data accumulated in the files of the Bureau of Medical Economics.

Although your committee agrees in principle with many of the objectives which the Interdepartmental Committee has in view, nevertheless there may be some danger involved in their execution. Your committee has in mind, for example, the devotion of huge sums of money to the care of certain specified diseases. Experience has already shown that such action may produce a lack of balance in the entire program for medical care which can retard rather than expedite progress.

Your committee emphatically agrees with the statement in the address which reads as follows: "No one formula or program can possibly be found adequate to meet the varied needs of medical care."

Your committee notes with satisfaction that a group of physicians has been invited to take part in the discussions of the forthcoming national health conference and that it includes officers and leaders of the American Medical Association. This will make available a vast amount of information concerning the subjects involved which has been accumulated by the American Medical Association over a period of years, including the results of our national survey of medical service. Your committee is confident that the official representatives will be guided by the principles and opinions which have been repeatedly expressed by the House of Delegates.

Respectfully submitted.

J. D. BROOK, Chairman.
W. F. BRAASCH.
WILLIAM R. BROOKSHER.
DON F. CAMERON.
MEREDITH MALLORY.

On motions of Dr. Brook, duly seconded and carried after discussion, the report of the Reference Committee on Executive Session was adopted as amended section by section and as a whole.

Report of Board of Trustees

Dr. Arthur W. Booth, Chairman, Board of Trustees, stated that the Deputy Commissioner of Internal Revenue had recently reversed the decision of a previous commissioner and held that the American Medical Association is not a scientific or educational corporation within the meaning of section 101 of the Revenue Act of 1936 and corresponding sections of prior revenue acts, but rather a business league and, therefore, not exempt from tax under the Social Security Act.

On receipt of that decision the Board of Trustees instructed the Secretary and General Manager to collect a tax from the employees, to make payments and, in the meantime, to take the matter up with a competent tax counsel. This was done and an opinion has been secured from the tax counsel. The Board yesterday voted to ask the Bureau of Internal Revenue for reconsideration. The recent decision of the Commissioner of Internal Revenue will involve large expenditures for the current year. No opportunity has been given the Association to provide the money for this tax. The Board is therefore in the position of having to find \$55,000 and possibly \$100,000 for the current year alone.

The Speaker announced that this report was read for the information of the House.

Dr. Austin A. Hayden, Secretary, Board of Trustees, made an announcement concerning the Opening General Meeting, after which the Speaker declared that the House would recess until 1 p. m. Thursday, June 16.

The House recessed at 4:30 p. m. to reconvene on Thursday, June 16, at 1 p. m.

Third Meeting—Thursday Afternoon, June 16

The House of Delegates was called to order at 1:15 p. m. by the Speaker, Dr. N. B. Van Etten.

Report of Reference Committee on Credentials

Dr. Deering G. Smith, Chairman, reported that there was a total registration of 170, which was only four below the possible number that could be registered.

Roll Call

The Secretary called the roll and announced that more than a quorum had responded.

Presentation of the Minutes

It was moved by Dr. Arthur C. Morgan, Pennsylvania, seconded by Dr. H. B. Everett, Tennessee, and carried, that the House dispense with the reading of the minutes.

Address of Dr. Carl H. Vrooman

The Speaker presented Dr. Carl H. Vrooman, Vancouver, B. C., Canada, delegate from the Canadian Medical Association, who addressed the House as follows:

Mr. Speaker, Members of the House of Delegates of the American Medical Association:

In presenting the greetings of the Canadian Medical Association to the members of the American Medical Association I wish to express the great pleasure it gives a Canadian to be present at these meetings or to welcome members of the American Medical Association at our own meetings.

I have been particularly impressed in listening to your proceedings by the similarity of our problems and the democratic methods used in solving them. Socialization of medicine looms large in your discussions and has the same lively interest with us, particularly so in my own province of British Columbia, as some of you may know. You have no monopoly on diversity of opinion in the maze of plans, legislative and otherwise, that are proposed for the care of the sick. It is a pleasure to hear your leaders emphasize that the care of the sick is the business of the physician. Ours are not the mild concerns of life, but we are entrusted by the people with their most valuable asset; namely, health. Sometimes I think we doubt that this trust imposed on us as individuals is transferred to the democratic organizations representing us whose duty it is to solve these medicosocial problems.

Our experience in Canada and particularly in British Columbia has been that the people trust organizations such as yours, or organized medicine, more than we sometimes think, and that the ill considered and amateurish solutions so often loudly presented do not carry the weight they seem to with the general public. People in your country and mine still trust democratic government and as long as your association and ours continue to be the democratic forum of the medical profession that trust will continue.

I have to read the official letter of Dr. Routley conveying the official greetings. This is to the President, Officers and Members of the American Medical Association.

Dr. Vrooman read the following letter of greetings from the Canadian Medical Association:

The Canadian Medical Association desires to take this opportunity of presenting, through its official fraternal delegate, Dr. C. H. Vrooman of Vancouver, most cordial good wishes for the success of the annual meeting of the American Medical Association being held in the city of San Francisco.

The Canadian Medical Association is deeply sensible of the spirit of good will which prevails in each association toward the other. You have always extended the hand of fellowship to members of the Canadian Medical Association who have been privileged to attend your meetings. We, in turn, would like to think that Fellows of the American Medical Association are conscious of the fact that they are always welcome guests on Canadian soil and at meetings of the Canadian Medical Association.

On behalf of the President, Officers and Members of the Canadian Medical Association, I beg to remain,

Fraternally yours,

T. C. ROUTLEY, M.D.,
General Secretary.

Report of Judicial Council

Dr. George Edward Follansbee, Chairman, presented the following report of the Judicial Council acting as a reference committee, which was adopted on motion of Dr. A. T. McCormack, Kentucky, seconded by Dr. G. Henry Mundt, Illinois, and carried:

Your committee has in several meetings given prolonged consideration to the Resolution on Teaching in Schools of Chiropody introduced by Dr. G. Henry Mundt, Illinois. The sponsor of the resolution and several of the delegates have appeared before the committee; arguments both pro and con have been heard. The more the matter has been studied, the more complicated it becomes. The committee, being the Judicial Council, is unwilling to make recommendation to this House unless it feels assured that its recommendation is correct and sound. Further information and further investigation, more than can be accomplished in the limited time available at this session of the House, is needed. The resolution does not pertain to an acute situation.

For these reasons your committee recommends that the resolution be laid on the table, with the expectation that, if a like resolution is presented at the next annual session of the House, the Judicial Council will be prepared to give recommendation based on adequate knowledge and sound judgment, if so requested and if a similar resolution is introduced.

GEORGE EDWARD FOLLANSBEE, Chairman.
JOHN H. O'SHEA.
WALTER F. DONALDSON.
JOHN W. BURNS.
E. R. CUNIFFE.

Resolution on Visual Standards for Operating Motor Vehicles, from the Section on Ophthalmology

Dr. Arthur J. Bedell, Section on Ophthalmology, presented the following resolution, which was adopted on motion of Dr. Bedell, seconded by Dr. Charles H. Goodrich, New York, and carried after discussion:

WHEREAS, For many years state licensing boards have asked for official visual standards for operating motor vehicles; and

WHEREAS, A committee of the Section on Ophthalmology of the American Medical Association has had this problem under serious consideration for many years and has made its report; and

WHEREAS, This report was accepted by the Section on Ophthalmology of this Association; and

WHEREAS, The delegate of the section was directed to present this report to the House of Delegates; be it

Resolved, That the following be accepted as the approved American Medical Association standards:

A. For an Unlimited License:

1. Visual acuity with or without glasses of 20/40 Sn. in one eye and 20/100 Sn. in the other.
2. A field of not less than 45 degrees in all meridians from the point of fixation.
3. The presence of binocular single vision.
4. Ability to distinguish red, green and yellow.
5. Night blindness not to be present.
6. Glasses when required be worn while driving and those employed in public transportation be provided with an extra pair.

B. Visual Standards for Limited License:

1. Visual acuity of not less than 20/65 Sn. in the better eye.
2. Field vision of not less than 60 degrees horizontally and 50 degrees vertically from point of fixation in one eye.
3. Diplopia not to be present.
4. Glasses to be worn when prescribed.
5. Coordination of eye, mind and muscle to be fully adequate to meet the practical visual road tests.
6. A limited license not to be issued to those employed in public transportation.

C. Renewals, Retesting and Reexaminations:

1. Renewals of license to be issued at least every third year. The applicant shall with each renewal make a declaration that he knows of no visual defect which has developed during the past year.
2. Retesting of acuity to be made at least every six years.
3. If any visual defects have developed, an examination by an ophthalmologist and the report thereof, to be required before reissuing the license.
4. License to state thereon the specific limitation for driving.

Resolutions from the Section on Nervous and Mental Diseases Recommending Alteration of Existing Laws Relative to Contraceptive Information

Dr. Tom B. Throckmorton, Section on Nervous and Mental Diseases, presented the following resolutions, presented to the Section on Nervous and Mental Diseases by Dr. Foster Kennedy, New York, which were referred to the Board of Trustees on motion of Dr. Throckmorton, seconded by Dr. Arthur C. Morgan, Pennsylvania, and carried:

WHEREAS, State and federal legislation governing the control of reproduction is conflicting and renders certain phases of medical practice illegal, it is important that the profession of medicine as a whole should clarify and lead in these questions involving medical practice and procedures. The importance of such control in medical practice where such control constitutes a therapeutic measure is obvious to enlightened lay opinion throughout the civilized world and should be obvious to all medical men not mediocrally minded; therefore be it

Resolved, That we hereby recommend the alteration of existing laws wherever necessary, so that physicians may legally give contraceptive information to their patients; and be it further

Resolved, That we recommend an amendment to sections 211, 245, 311 and 312 of the Federal Penal Code as follows: "Standard medical and scientific journals and reprints therefrom and standard medical works which contain information regarding the prevention of conception are not nonmailable under this section"; and be it further

Resolved, That a full and frank discussion be given in regard to these subjects by the proper deliberative council of the American Medical Association.

Report of Reference Committee on Legislation and Public Relations

Dr. Terry M. Townsend, Chairman, presented the following report:

Report of Bureau of Legal Medicine and Legislation and Resolution on Recognition of Acting Assistant Surgeons of the Spanish-American War: A survey of the report of the Bureau of Legal Medicine and Legislation discloses the vast amount of work done. It recites legislation proposed by gentlemen who are not fully familiar with the economics of medicine and their effect on the public. It narrates the large subsidies proposed for federal health activities in the prevention and treatment of cancer, venereal diseases, tuberculosis, infantile paralysis, blindness, deafness, silicosis, medical care for transients, and hospitals for the medically needy. Much of this legislation died in committee or failed to pass.

During the Spanish-American War many physicians volunteered their services in the capacity of Contract or Acting Assistant Surgeons. They rendered the same service, tolerated the same living conditions and took the same risks as commissioned medical officers, but they could not be given commissions as the then existing laws made no provision for such commissions. It is only the lack of these commissions that now stands between these physicians and their old age service pensions. Nurses who served in the same status in the same war have long since received their pensions. The same thought is embodied in the resolutions introduced by Dr. Elbridge J. Best, California. Your reference committee endorses these resolutions and recommends that this House of Delegates commit itself to continue support of legislation to provide pensions for Contract and Acting Assistant Surgeons who served in the Spanish-American War, the Philippine Insurrection and the Boxer Uprising.

Among the several bills introduced in Congress proposing reorganization of the executive branch of the federal government, all propose the establishment of a Department of Welfare and none suggest the creation of a Department of Health. Since the health of the people is of such importance to the government, your committee recommends that this House of Delegates reiterate its demand for a federal executive department to be designated as the Department of Health, with a Doctor of Medicine at its head who shall have general supervision and direction of the affairs of the federal government pertaining to the health of the people.

Workmen's compensation legislation is expanding its scope to provide compensation for disability resulting from any occupational disease arising out of and in the course of employ-

ment. To safeguard the injured workman, the carrier and the physician, there should be medical membership on each compensation commission or industrial board. Only competent doctors of medicine can evaluate and determine the worth of medical evidence, which constitutes the crux of each decision on each claim presented to the commission or board. Your committee recommends that the constituent state medical associations be advised to take such action as may be necessary to procure medical memberships on compensation commissions and industrial boards.

Your committee congratulates and compliments the Medical Society of the District of Columbia on its successful efforts in preventing prohibitive legislation on animal experimentation.

Report of Bureau of Medical Economics: That portion of the report of the Board of Trustees devoted to the Bureau of Medical Economics deserves your commendation. Especially does your committee recommend your commendation of the statements pertaining to the study of medical care, group hospitalization and the expansion of hospital functions into the field of medical practice. The developments in these fields are, in the opinion of your committee, clearly and fairly set forth. Your committee recommends that the Association's activities in these fields be in the same careful manner that has characterized its work up to the present time.

Your reference committee has studied carefully the objectives of the study of medical care called for in the resolutions passed by the Board of Trustees in December 1937. This project is but a furtherance and extension of the encouragement which the American Medical Association has previously given to state and county medical societies to develop means by which all persons might readily obtain medical care at fees commensurate with their ability to pay; it is consistent with the repeatedly expressed position of this Association that the medical and preventive medical services and facilities can be supplied satisfactorily and efficiently only when the needs are known and then the procedures for supplying these needs must vary according to local conditions.

Your committee is unanimously of the opinion that state and county medical societies cannot afford not to develop for their respective jurisdictions the most accurate and complete information that will enable them, with the assistance of the correlated professions and other agencies concerned with medical and preventive medical services and facilities, to maintain continuously medical care that is sufficient in amount and satisfactory in quality.

Since it is contemplated in the resolutions passed by the Board of Trustees that some state and county medical societies may find it necessary to develop preferable procedures for supplying the needs where medical services are insufficient or unavailable, it is urged that these medical societies be guided in the development of these procedures by the ten principles adopted by the House of Delegates in 1934. The application of these ten principles to specific suggestions or proposals for the organization of medical services may be facilitated by utilizing the method of direct cash payments to individual members. Your committee unanimously concurs in the suggestion and recommends that the American Medical Association adopt the principle that in any place or arrangement for the provision of medical services the benefits shall be paid in cash directly to the individual member. Thus, the direct control of medical services may be avoided. Cash benefits only will not disturb or alter the relations of patients, physicians and hospitals.

Your committee has considered in detail that portion of the report of the Board of Trustees devoted to the Bureau of Medical Economics under the heading "Group Hospitalization" and also the separate statement of the Bureau of Medical Economics entitled "Group Hospitalization Insurance." Your committee commends the clarity and forcefulness of these statements and recommends that the ten principles adopted in 1937 as the policy of the American Medical Association be amplified by the addition of the following statement to Principle 4:

If for any reason it is found desirable or necessary to include special medical services such as anesthesia, radiology, pathology or medical services provided by outpatient departments, these services may be included only on the condition that specified cash payments be made by the hospitalization organization directly to the subscribers for the cost of the services.

Disapproval of the inclusion of special medical services on a service basis in hospitalization insurance contracts will then be explicit but a constructive alternative arrangement will be possible.

Report of Committee on Legislative Activities: The report of the Committee on Legislative Activities indicates the large amount of work done and the many hours spent in the interest of organized medicine. The last paragraph reiterates the advice to members of county societies to scale their charges for professional services in accordance with local economic conditions. Your committee commends the industry of the Committee on Legislative Activities.

Resolutions on Program of Public Relations: The resolutions submitted by Dr. Lyell C. Kinney, California, were considered in joint session with the Reference Committee on Amendments to the Constitution and By-Laws. The result of the joint consideration will be reported by the Chairman of the Reference Committee on Amendments to the Constitution and By-Laws.

Respectfully submitted.

TERRY M. TOWNSEND, Chairman.
W. ALBERT COOK.
CHARLES A. DUKES.
HENRY C. MACATEE.
WALTER B. MARTIN.

On motions of Dr. Townsend, duly seconded and carried, the report of the Reference Committee on Legislation and Public Relations was adopted section by section and as a whole.

Report of Reference Committee on Hygiene and Public Health

Dr. Charles H. Goodrich, New York, acting for Dr. H. B. Everett, Chairman, presented the following report:

Your reference committee recommends that the Resolutions on Controlled Animal Experimentation, which had been introduced by Dr. Elbridge J. Best, California, be adopted after being amended to read as follows, and that the Board of Trustees be requested to undertake such measures as will make them most effective:

WHEREAS, The knowledge, possessed by modern medicine and the remedial measures made available for the prevention, diagnosis and treatment of disease in human beings, live stock and other domestic animals has been made possible only by controlled, humane, scientific animal experimentation, controlled by medical men, research workers and laboratories; and

WHEREAS, Controlled animal experimentation has uncovered the causes of contamination or blighting of many foods (fruits, vegetables, milk) which makes them dangerous for human and animal consumption; and

WHEREAS, Continuous research, study and investigation of causes and prevention of many human diseases, animal infections and causes for food deterioration are dependent on a continuation of controlled animal experimentation in order that human health and lives, as well as live stock and foodstuffs, may be saved and financial losses be prevented; and

WHEREAS, There are many poorly informed individuals now active in an endeavor to enact legislation that would cripple legitimately and humanely controlled animal experimentation, so vitally necessary to those scientific men who are seeking the etiology and prevention of conditions that still cause human suffering, kill fowl, other bird life and animals and affect the raising of foodstuffs; and

WHEREAS, These individuals, commonly known as antivivisectionists, wilfully repudiate, ignore and misrepresent the proved facts that have been established by scientific research and study and persist in their efforts to mislead people in their endeavor to secure the enactment of laws prohibiting animal experimentation, which laws and prohibition would cause much human suffering, loss of lives and destruction of animals and foodstuffs and would also terminate the studies of scientists and laboratory research workers; therefore, be it

Resolved, By the American Medical Association: 1. That scientifically controlled animal experimentation is of supreme importance in the study and investigations seeking the cause and cure of factors and conditions that affect the health of and cause the death of human beings, animals, dogs, fowls, birds and live stock.

2. That any and all efforts to restrict or prohibit humanely controlled animal experimentation will cause untold suffering, loss of lives of human beings, animals and live stock and produce an incalculable financial loss to every community, industry and the commonwealth; and further be it

Resolved, That the American Medical Association condemns the efforts of all who endeavor to cripple scientific research by seeking to obtain the enactment of laws hampering or prohibiting the use of animals in research investigation; and further be it

Resolved, That the House of Delegates recommends that each unit of this Association be urged (1) to undertake immediately the education of the public on the need and value of competent animal experiments and (2) to expose the unjustifiable and insupportable claims and allegations of those who seek to obtain laws that may hamper or prohibit the humane use of animals in research studies.

Respectfully submitted.

H. B. EVERETT, Chairman.
CHARLES H. GOODRICH.
J. F. HASSIG.
CHARLES S. SKAGGS.
JOSEPH F. SMITH.

On motion of Dr. Goodrich, seconded by Dr. Robert A. Peers, California, and carried after discussion, the report of the Reference Committee on Hygiene and Public Health was adopted.

Report of the Reference Committee on Miscellaneous Business

Dr. Fred Moore, Chairman, presented the following report:

1. Resolution Dealing with Alcoholic Intoxication: Your committee sees much merit in the request as expressed in this resolution and recommends that it be transmitted to the Board of Trustees with the recommendation that the American Medical Association initiate studies for determination of definite, legally acceptable, scientific, clinical and laboratory tests for alcoholic intoxication. It further recommends that a report of said studies be presented to the House of Delegates at its next annual session.

2. Resolutions on Services of Section Delegates: Your reference committee was fortunate in having some of the section delegates meet with it for consideration of this resolution.

This petition is based on the following facts: 1. The existence of numerous societies of specialists wholly independent of the American Medical Association. 2. Occurrence of discussions and procedures in those societies which sometimes indicate a lack of understanding of the policies and procedures of this House. 3. A desire by sponsors of this resolution to correct these misunderstandings and substitute intelligent cooperation therefor.

Your committee is in complete accord with the desirable objectives of these resolutions and offers the following recommendations:

(a) That this House request delegates from the several sections to act as liaison between the House and those special societies whose scientific interests are included in the respective scientific sections of the American Medical Association which the delegates represent.

(b) That the Secretary of this House shall each year communicate with presidents and secretaries of all such societies as his judgment may dictate, for the purpose of identifying section delegates and reaffirming to these societies the desire of the American Medical Association for sympathetic cooperation in coordinating all medical interests and activities.

(c) That the Secretary of this House shall after each annual session communicate with the delegates from each section advising them regarding the desire of the House in this respect.

Respectfully submitted.

FRED MOORE, Chairman.
E. S. HAMILTON.
WALT P. CONAWAY.
F. S. CROCKETT.
E. L. HENDERSON.

On motions of Dr. Moore, duly seconded and carried, the report of the Reference Committee on Miscellaneous Business was adopted section by section and as a whole after discussion.

Report of Reference Committee on Amendments to the Constitution and By-Laws and Reference Committee on Legislation and Public Relations as a Joint Committee

Dr. H. A. Luce, Chairman of the Joint Committee, presented the following report, which was adopted on motion of Dr. Luce, seconded by Dr. A. A. Ross, Texas, and carried:

Your joint committee wishes to state at the outset that in its opinion there exists within the House of Delegates, all officers of the society and the entire membership of the organization complete harmony as to purposes and objectives, said purposes and objectives being better trained and better qualified physicians to the end that the American people may still continue the recipients of the highest quality of service. Furthermore, any apparent lack of harmony in the ranks of organized medicine is not based on truth but is due to attempts to discredit that large group who from the time of Aesculapius has contributed so much to human life and happiness.

Your joint committee has given careful and prolonged consideration to the proposed amendments to the By-Laws, presented by the delegation from the state of Michigan, proposing the creation of a committee on public relations, and the cognate resolutions presented by Dr. Lyell C. Kinney, California, requesting the Board of Trustees to employ professional public relations counsel, the proposed amendments and resolutions having the object of establishing a closer relationship between the public and organized medicine.

Delegates from the states of California, Massachusetts and New York spoke in support of the resolutions, and a number of other delegates appeared to denote their interest. Your committee also received from Dr. Austin A. Hayden, Secretary of the Board of Trustees, from Dr. Olin West, Secretary, from Dr. Morris Fishbein, Editor of THE JOURNAL, from Dr. W. C. Woodward, Director of the Bureau of Legal Medicine and Legislation, from Dr. W. W. Bauer, Director of the Bureau of Health Education, and from Dr. R. G. Leland, Director of the Bureau of Medical Economics, detailed information concerning the contacts and channels through which the public is constantly reached through agencies already in existence and in active operation. The joint committee was impressed with the importance of avoiding any innovation which might disturb these arrangements, which have been built up through the years and depend on many subtle and delicate personal relationships.

Your joint committee also considered the implications of the costs involved, together with the tax liabilities that might arise from any radical change in the methods of publicity maintained by the Association.

The foregoing considerations have led your committee to return the proposed amendments and resolutions without its approval. However, the committee feels impelled by reason of the sentiment revealed by the presentation of these proposed amendments and resolutions and the support of them from so many diverse quarters, as well as by common knowledge of the frequent unsatisfactory attitude of the press, to ask the House of Delegates to impress on the Board of Trustees its feeling that careful consideration should be given to the operation of our agencies of public information so that, on the one hand, the necessary *fortiter in re* may be preserved and, on the other, that certain deficiencies of *suaviter in modo* may be corrected.

Respectfully submitted.

For the Committee on Amendments to the Constitution and By-Laws:

H. A. LUCE, Chairman.
HERBERT L. BRYANS.
GEORGE P. JOHNSTON.
CHARLES J. WHALEN.
RAYMOND L. ZECH.

For the Committee on Legislation and Public Relations:

TERRY M. TOWNSEND, Chairman.
W. ALBERT COOK.
CHARLES A. DUKES.
HENRY COOK MACATEE.
WALTER B. MARTIN.

Resolutions on Status and Future of Army Medical Library and Museum

Dr. Roger Brooke, United States Army, asked and received the unanimous consent of the House to introduce the following resolutions, which were adopted on motion of Dr. Brooke, seconded by several and carried:

WHEREAS, The Congress of the United States passed an act which was approved by the President June 15, 1938, authorizing the construction of a new building to house the Army Medical Library and Museum at Washington, D. C.; and

WHEREAS, The Army Medical Library, commonly called the Surgeon General's Library, is now housed in an old building totally inadequate for the purpose, thus limiting the use of this most extensive and valuable collection of medical books and literature and subjecting it to extreme fire hazards; and

WHEREAS, This library, established more than a hundred years ago, and the museum more than seventy-five years ago, by the Surgeon General of the Army, have operated most efficiently under the Army Medical Department since their establishment and should so continue to operate; be it

Resolved, That the House of Delegates of the American Medical Association express its high appreciation to the Congress and the President of the United States for the recent enactment of legislation authorizing the construction of a new building for the Army Medical Library and Museum; and further be it

Resolved, That the House of Delegates petition the Congress of the United States and the President to make available as soon as practicable funds for the construction of a new building for the Army Medical Library and Museum.

Address of Dr. Charles M. Greenslade

The Speaker presented Dr. Charles M. Greenslade, Dunedin, New Zealand, representative of the New Zealand Branch of the British Medical Association, who addressed the House as follows:

Mr. Speaker, Members of the House of Delegates of the American Medical Association:

Let me say that your welcome overcomes me. I come from a very small country. I represent the New Zealand branch of the British Medical Association and it is my privilege to accept your hospitality. We look more and more to the United States of America for advances in medicine and in surgery, and many of our men nowadays come to the United States to help themselves in the furtherance of their work. I deem it a great privilege to be here today and I thank you very much indeed for the way in which you have received me.

Remarks of Past President W. D. Haggard

Mr. Speaker, Gentlemen of the Association:

It is a very great pleasure to be with you here on this auspicious occasion. I am very happy that our colleague who speaks the mother tongue that we can almost understand is here in the capacity of our guest. We know of New Zealand and its contributions and the splendid membership it maintains in our profession. I am very happy to acknowledge on your behalf the greetings extended to you by our distinguished guest.

Remarks of Past President James S. McLester

Just one thing I can say to our British cousin that I said on another occasion, that is to tell him how we feel toward the British commonwealth of nations. A number of years ago right after the World War I was in the Panama Canal Zone looking over the fortifications with an army friend and I commented on the fact that the Pacific side was fortified so much better than the Atlantic side. I told him I wondered about that. He said, "Well, eventually the Atlantic side is going to be fortified just as well, but you must remember that on the Atlantic side we shall always have the British fleet."

Messages Condemning the Bombing of Hospitals and Red Cross Units

The Secretary read two telegrams, one received from the president of the China War Relief Association of America and the other from members of the medical staff of the Massachusetts General Hospital, as follows:

The Chinese people appeal to your convention to go on record in condemning the bombing of hospitals and Red Cross units in China by the Japanese air corps. The unwarranted destruction of lives and property engaged in discharging errands of mercy is growing every day and we

urge the medical profession in joining their colleagues in China in protesting against such atrocities.

B. S. FONG.

The undersigned members of the medical staff of the Massachusetts General Hospital, Boston, request that the American Medical Association, now assembled in convention at San Francisco, send a resolution from that body to the President of the United States to this effect: The A. M. A. strongly condemns the ruthless killing of innocent civilians in China by Japanese bombs and appeals to you to exert every possible pressure to stop not only this inhuman practice but also the continued flow of munitions, gasoline and scrap iron to Japan from our country.

ROY MINTZ.
D. L. SISCOE.
JOHN W. CASS JR.
M. T. EADES.
BENJAMIN TENNEY JR.

R. B. KING.
WILLIAM JASON MIXTER.
PAUL NORTON.
DONALD S. KING.
ARMIN KLEIN.
GEORGE W. VAN GORDER.

It was moved by Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. John Q. Myers, North Carolina, and carried after discussion, that the House of Delegates go on record as disapproving the action of any country in bombing hospitals, Red Cross units and the helpless public.

ELECTION OF OFFICERS

Dr. Olin West, Secretary, on request of the Speaker, read Sections 1 and 3, Chapter IV, of the By-Laws referring to nominations.

Election of President-Elect

Dr. Joseph F. Smith, Wisconsin, nominated for President-Elect Dr. Rock Sleyster, Wauwatosa, Wis., and the nomination was seconded by Dr. W. E. Kittler, Illinois, for the Illinois delegation, and Drs. John W. Ames, Colorado; H. B. Everett, Tennessee; Walter E. Vest, West Virginia; Olin H. Weaver, Georgia; Tom B. Throckmorton, Section on Nervous and Mental Diseases; Burt R. Shurly, Section on Laryngology, Otology and Rhinology; William R. Molony Sr., California; C. W. Waggoner, Ohio; Frederick W. Meyer, Philippine Islands; Samuel P. Mengel, Pennsylvania; E. L. Henderson, Kentucky; J. W. Burns, Texas, and W. Albert Cook, Oklahoma.

Dr. W. H. Seemann, Louisiana, moved that the nominations be closed, and the motion was seconded by Dr. W. Albert Cook, Oklahoma, and carried unanimously.

Dr. J. W. Burns, Texas, moved that the Secretary be instructed to cast the unanimous ballot of the House for Dr. Rock Sleyster as President-Elect. The motion was seconded by Drs. H. B. Everett, Tennessee; J. Gurney Taylor, Wisconsin, and Tom B. Throckmorton, Section on Nervous and Mental Diseases, and carried unanimously.

The Secretary cast the unanimous vote of the House for Dr. Rock Sleyster, Wauwatosa, Wis., for President-Elect of the American Medical Association for the ensuing year, and the Speaker declared Dr. Sleyster so elected.

Election of Vice President

Dr. A. T. McCormack, Kentucky, addressed his remarks to the Vice Speaker, placing in nomination for Vice President the name of Dr. N. B. Van Etten, New York. The Speaker stated that there is a definite by-law which prohibits such a nomination.

Dr. A. A. Walker, Alabama, placed in nomination for Vice President the name of Dr. Howard Morrow, San Francisco, and the nomination was seconded by Dr. Clyde L. Cummer, Section on Dermatology and Syphilology, and Dr. William R. Brooks, Arkansas.

On motion of Dr. J. Newton Hunsberger, Pennsylvania, seconded by Dr. J. E. Paullin, Section on Practice of Medicine, and carried, the nominations were closed.

It was moved by Dr. E. G. Wood, Tennessee, that the Secretary be instructed to cast the unanimous ballot of the House for Dr. Howard Morrow as Vice President. The motion was seconded by Dr. A. T. McCormack, Kentucky, and carried.

The Secretary cast the unanimous vote of the House for Dr. Howard Morrow, San Francisco, for Vice President of the American Medical Association for the ensuing year, and the Speaker declared Dr. Morrow so elected.

Address of President-Elect Rock Sleyster

The Speaker presented the President-Elect, who addressed the House as follows:

Mr. Speaker, Members of the House:

I am going to ask you to be very charitable. I confess to being somewhat emotionally upset, and as you well know this great honor has come to me as a complete surprise. We are living in a very muddled world. One example of it: As we are gathered here some seven thousand strong to perfect ways and means of saving human life, a muddled world is spending billions and working feverishly in preparation for taking human life. It is a muddled world, inhabited by muddled people who are often given to muddled thinking, and I am wondering, Mr. Speaker, how much this picture may have influenced you in deciding to try psychiatric leadership.

The House of Delegates, representing nearly 110,000 American physicians, the only body authorized to speak for American medicine, formulates and voices the principles and policies which are necessary to insure to the American people the highest standards of medical care. Your officers and your Board of Trustees are charged with the responsibility of carrying out these policies in the interim between your deliberations. A newly elected executive can do little and say little except to affirm again his loyalty to those policies and to pledge you his best efforts in their behalf. It is this I promise you.

It is difficult to find words to express to you my appreciation of the great confidence you have placed in me. I am very happy, I am very proud, I am very humble in a realization of the responsibilities I shall assume a year hence. I pray that I may be given strength and courage and wisdom to meet the trust you have placed in me. There is so little to say except I shall do my best, and thank you.

Election of Secretary

Dr. A. T. McCormack, Kentucky, nominated Dr. Olin West, Chicago, to succeed himself as Secretary of the Association, and the nomination was seconded by Dr. Charles H. Goodrich, in behalf of the delegation from New York. The nominations were closed on motion of Dr. John Q. Myers, North Carolina, seconded by several and carried.

It was moved by Dr. J. D. Brook, Michigan, seconded by Dr. H. B. Everett, Tennessee, and carried, that the Speaker cast the ballot of the House for Dr. Olin West as Secretary.

The Speaker cast the ballot of the House for Dr. Olin West, Chicago, as Secretary of the American Medical Association, which was supported by a unanimous rising vote, and the Speaker declared Dr. West elected Secretary for the ensuing year.

Election of Treasurer

Dr. Arthur W. Booth, Chairman of the Board of Trustees, stated that the Board of Trustees nominated Dr. Herman L. Kretschmer, Chicago, as Treasurer. The nomination was approved by the House, and the Speaker declared Dr. Herman L. Kretschmer elected Treasurer for the ensuing year.

Election of Speaker of the House of Delegates

Dr. E. G. Wood, Tennessee, nominated for Speaker Dr. Harrison H. Shoulders, Nashville, Tenn. The nomination was seconded by Drs. H. B. Everett, Tennessee; Virgil Simpson, Kentucky; Charles A. Dukes, California; William H. Myers, Georgia; John Q. Myers, North Carolina; J. Gurney Taylor, Wisconsin; Howard L. Snyder, Kansas, and James E. Paullin, Section on Practice of Medicine.

Dr. James E. Paullin, Section on Practice of Medicine, moved that the nominations be closed, and the motion was seconded by several delegates and carried.

On motion of Dr. H. B. Everett, Tennessee, seconded by Dr. Charles W. Roberts, Georgia, and carried, the Secretary cast the unanimous vote of the House for Dr. Harrison H. Shoulders, Nashville, Tenn., for Speaker of the House of Delegates for the ensuing year, and Dr. Shoulders was declared duly elected Speaker of the House.

Election of Vice Speaker of the House of Delegates

The Speaker declared the next order of business to be the election of a Vice Speaker of the House of Delegates.

Dr. Junius B. Harris, California, nominated for Vice Speaker Dr. Edward M. Pallette, Los Angeles, and the nomination was seconded by Dr. Robert A. Peers, for the California delegation.

Dr. Fred Moore, Iowa, nominated for Vice Speaker Dr. Roy W. Fouts, Omaha, and the nomination was seconded by Dr. John W. Ames, Colorado.

Dr. Richard H. Miller, Massachusetts, nominated for Vice Speaker Dr. John M. Birnie, Springfield, Mass., and the nomination was seconded by Dr. William A. Ellingwood, Maine.

On motion of Dr. J. Newton Hunsberger, Pennsylvania, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried, the nominations were closed, and the Speaker asked the tellers to spread the ballot.

The Secretary announced that 166 delegates had been recorded as present and that 162 votes had been cast, of which Dr. Edward M. Pallette received 42, Dr. Roy W. Fouts 95 and Dr. John M. Birnie 25.

On motion of Dr. John M. Birnie, Massachusetts, seconded by Dr. Junius B. Harris, California, and carried, the election of Dr. Roy W. Fouts, Omaha, as Vice Speaker of the House of Delegates for the ensuing year was made unanimous.

Appreciation of the Speaker, Dr. N. B. Van Etten

Dr. Charles H. Goodrich, New York, moved that the House of Delegates express its appreciation of the inspiration and thought, consideration and poise Dr. Van Etten had given it during his term as Speaker. The motion was seconded by Drs. W. H. Seemann, Louisiana; H. B. Everett, Tennessee, and George M. Fisher, New York, and carried.

Report of Council on Medical Education and Hospitals

Dr. Ray Lyman Wilbur, Chairman, presented the following report:

There seems to be some confusion in the minds of a good many of the Delegates and members of the Association as to the exact function of the Council on Medical Education and Hospitals and various other organizations now in the field both of education and of the hospitals. This is important, since we are going into a period of considerable experimentation, legislative and otherwise. It seemed desirable for you to remember that the Council has its power through the Association and that that power is largely a matter of publicity. Our relationship to the institutions that teach medical students is primarily based on the fact that we publish an approved list of those schools. That gives us a position of influence if not of power. We cannot tell those institutions what to do. Our relationship to the hospitals is largely because we have to do with the education of interns and of resident physicians and publish a list of approved hospitals for interns and residents, and also a list of hospitals on a register. Through THE JOURNAL, and particularly through the Directory which we publish, we have a direct relationship to practically all the physicians in the country.

There has come into the field in recent years the advisory board of the various specialties. That advisory board has entered on a study of graduate instruction through a commission supported by the various foundations. The chairman of that commission is Dr. W. C. Rappleye. There are two members of the Council on Medical Education and Hospitals on that commission. It is to study the philosophy of graduate instruction, not those institutions giving such instruction.

There is also in this field the American Hospital Association and the American College of Surgeons, and each hospital is apt to have a relation to these three bodies.

In connection with the advisory board on specialties we have assumed certain powers in regard to them by not joining this advisory board but asking that each board submit to the Council its constitution and its program for the approval of the Council. Some of those who were reluctant to do so found that our power largely consisted in our ability not to list them in the directory, so that I think we can say now that all of the special boards are in a direct relationship to the Council.

The hospital is becoming the center of experimentation in the fields of medical care. It is said that there are some 300 different propositions in different parts of the country, and what

goes on in the hospital is of enormous significance to us now as we approach this period when there is apt to be more and more in the way of legislative experimentation in this field.

There may be confusion between our Council and the American Hospital Association and the American College of Surgeons. We would like to have your continued support and an understanding with you that we as the representatives of the House of Delegates and the American Medical Association are in a position to take firm positions regarding certain of these propositions as they arise, and to seek the help of the other two associations. If you belong to the American College of Surgeons we ask you to help us bring about cooperation and coordination. If you are in the American Hospital Association we ask the same thing. If the medical profession in its relationship to these institutions is not a unit and not united, we are going to find ourselves in many difficulties that we can avoid by a well understood and well supported approach to these difficult questions.

I have made this statement in the hope that it would clarify for you just what is going on and so that it would leave in your minds the necessity of helping us represent you as the special problems come up, as they will, in connection not only with hospitals but with the medical schools. This is of vital importance in the field of graduate instruction, since, as I suggested the other day, we are now getting support from various sources, including the federal government, in some of these graduate courses, and what goes on there will have to go on largely through the hospitals and our relationship with those hospitals must be not only understood but backed if we are to take this common program forward. Thank you very much.

Dr. Arthur J. Bedell, Section on Ophthalmology, moved that the report of the Council on Medical Education and Hospitals be approved, and the motion was seconded by Dr. H. B. Everett, Tennessee, and carried.

Election of Trustees

The Speaker declared the next order of business to be the election of two Trustees, each to serve five years, to succeed Drs. Austin A. Hayden, Chicago, and Charles B. Wright, Minneapolis, whose terms expire this year.

Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, nominated Dr. Austin A. Hayden to succeed himself as a Trustee, and the nomination was seconded by Drs. G. Henry Mundt, Illinois; J. W. Burns, Texas; A. A. Walker, Alabama; Charles A. Dukes, California, and H. B. Everett, Tennessee.

The nominations were closed on motion of Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. Charles H. Goodrich, New York, and carried, and the Secretary was instructed to cast the ballot of the House for Dr. Austin A. Hayden, Chicago, as Trustee, on motion of Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, seconded by Dr. John Z. Brown Sr., Utah, and carried.

The Secretary cast the unanimous ballot of the House for Dr. Austin A. Hayden to succeed himself as a member of the Board of Trustees for a term of five years, and the Speaker declared Dr. Hayden so elected.

Dr. W. F. Braasch, Minnesota, nominated Dr. Charles B. Wright, Minneapolis, to succeed himself as Trustee, and the nomination was seconded by Drs. J. E. Paullin, Section on Practice of Medicine; Charles W. Roberts, Georgia; J. Gurney Taylor, Wisconsin; Walter R. Steiner, Connecticut; E. L. Henderson, Kentucky; Felix J. Underwood, Mississippi, and J. W. Burns, Texas.

The nominations were closed on motion of Dr. George W. Kosmak, New York, seconded by Dr. W. H. Seemann, Louisiana, and carried.

On motion of Dr. J. D. Brook, Michigan, seconded by Dr. A. T. McCormack, Kentucky, and carried, the Secretary was instructed to cast the vote of the House for Dr. Charles B. Wright, Minneapolis, as Trustee.

The Secretary cast the unanimous vote of the House for Dr. Charles B. Wright, Minneapolis, to succeed himself as a member of the Board of Trustees for a term of five years, and the Speaker declared Dr. Charles B. Wright so elected.

Nominations for Standing Committees

Dr. Irvin Abell, President, submitted the following nominations for standing committees:

Judicial Council: Dr. John H. O'Shea, Spokane, Wash., to succeed himself, for a term ending in 1943.

Council on Medical Education and Hospitals: Dr. Frank H. Lahey, Boston, to succeed Dr. Frederic A. Washburn, who has given most efficient and excellent service and who desires to be released from further service, for a term ending in 1945.

Council on Scientific Assembly: Dr. James E. Paullin, Atlanta, Ga., to succeed himself, for a term ending in 1943.

It was moved by Dr. A. T. McCormack, Kentucky, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried, that the nominations be confirmed.

Election of Affiliate and Associate Fellows

The Secretary presented the following nominations for Affiliate and Associate Fellowship, which on motions duly seconded and carried, were confirmed by the House:

NOMINATIONS FOR AFFILIATE FELLOWSHIP

Collins, Homer C., Duluth, Minn.
Heyerdale, Oscar C., Rochester, Minn.
Hickling, D. Percy, Washington, D. C.
Olsen, Marie A., Chicago.
Ramsey, Russell T., Denver.
Stoll, John J., Chicago.

NOMINATIONS OF AMERICAN MEDICAL MISSIONARIES FOR ASSOCIATE FELLOWSHIP APPROVED BY THE JUDICIAL COUNCIL

Michener, Robert B., Kaimosi, Kisumu Kenya Colony, East Africa.
Thorne, George W., Pacific Grove, Calif.
Whitcomb, Elmer William, Baitalpur, C. P., India.

NOMINATIONS FOR ASSOCIATE FELLOWSHIP APPROVED BY THE SECTIONS INDICATED

LARYNGOLOGY, OTOTOLOGY AND RHINOLOGY

Ambrecht, Edward C., Wheeling, W. Va.

PATHOLOGY AND PHYSIOLOGY

Clawson, Benjamin J., Minneapolis.
Erlanger, Joseph, St. Louis.
Quigley, John P., Cleveland.
Rose, William C., Urbana, Ill.

PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH

Miller, Ray Norris, Emporia, Kan.

Place of 1939 Annual Session

The Speaker announced that the next order of business was the selection of the place of the 1939 annual session.

Dr. G. Henry Mundt, Illinois, extended an invitation from the Chicago Medical Society and the Illinois State Medical Society to the American Medical Association to hold its 1939 annual session in Chicago.

Dr. Carl F. Vohs, Missouri, extended an invitation from the St. Louis Medical Society and the Missouri State Medical Association to the American Medical Association to meet in St. Louis in 1939. The invitation was supported by Dr. Floyd S. Winslow, for the delegates of the Medical Society of the State of New York, and by the Ohio delegation.

Dr. Francis F. Borzell, Pennsylvania, extended an invitation from Philadelphia, the Medical Society of the State of Pennsylvania and the medical schools in Philadelphia to the American Medical Association to meet in Philadelphia in 1939.

Dr. H. A. Luce, Michigan, extended an invitation from the state of Michigan, from Detroit and from the component county and constituent state medical societies to the American Medical Association to hold its 1939 annual session in Detroit. The invitation was supported by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology.

Dr. Walt P. Conaway, New Jersey, extended an invitation from the Medical Society of New Jersey and from the Atlantic County Medical Society to the American Medical Association to meet in Atlantic City in 1939.

Dr. Arthur W. Booth, Chairman, Board of Trustees, presented the following report: The following cities have sent invitations, within the limits according to our rules, and these are arranged

alphabetically: Atlantic City, Chicago, Cleveland, Detroit, Kansas City, Minneapolis and St. Paul, New York, Philadelphia, St. Louis.

New York has specifically asked to have the session of the American Medical Association in 1940; Minneapolis and St. Paul, Twin Cities, as well as Detroit and St. Louis in any of the three years 1939, 1940 or 1941.

On request of Dr. J. C. Flippin, Virginia, the Secretary presented a statement with respect to the facilities for holding the annual session of the American Medical Association in the cities that had sent invitations.

The Speaker announced that the American Medical Association had been invited to meet in 1939 in Chicago, St. Louis, Philadelphia, Detroit and Atlantic City. He asked the tellers to spread the ballot, and the Secretary announced that 167 delegates had been reported present and that 161 votes had been cast, of which Atlantic City received 29, Chicago 25, Detroit 10, Philadelphia 21 and St. Louis 76.

The Speaker announced that another vote would have to be taken since no city had received a majority of the votes and that in accordance with the rules the city receiving the smallest number of votes, namely, Detroit, would have to be dropped from the ballot. He added that he had been requested to announce that in order to expedite the vote Philadelphia would retire from the contest so that there would be three cities for which to vote: Chicago, St. Louis and Atlantic City.

The Secretary announced that 167 delegates had been reported present and that 143 votes had been cast, of which St. Louis received 93, Atlantic City 36 and Chicago 14, and the Speaker declared that the House of Delegates had selected St. Louis for the 1939 annual session of the American Medical Association.

Place of 1940 Annual Session

On motion of Dr. Arthur J. Bedell, Section on Ophthalmology, duly seconded and carried, the nominating speeches were limited to one minute each.

Dr. Francis F. Borzell, Pennsylvania, invited the American Medical Association to meet in Philadelphia in 1940, extending the invitation from Philadelphia, the Medical Society of the State of Pennsylvania and the medical schools in Philadelphia.

Dr. Frederic E. Sondern, New York, invited the American Medical Association to hold its 1940 annual session in New York City, and the invitation was supported by Dr. Carl R. Steinke, for the Ohio delegation, Dr. James R. McVay, for the Missouri delegation and Dr. Charles S. Skaggs, Illinois.

On motion of Dr. Arthur J. Bedell, Section on Ophthalmology, regularly seconded and carried, the nominations were closed and the Speaker announced that New York, Philadelphia and Atlantic City were the cities placed in nomination for the 1940 annual session of the American Medical Association.

The Secretary announced that 167 delegates had been recorded present and that 132 votes had been cast, of which number New York received 83, Atlantic City 31 and Philadelphia 18, and the Speaker declared that the House of Delegates had selected New York City for the 1940 annual session of the American Medical Association.

Place of 1941 Annual Session

Dr. J. D. Brook, Michigan, extended an invitation to the American Medical Association to meet in Detroit in 1941.

Dr. Clyde L. Cummer, Section on Dermatology and Syphilology, extended an invitation from the Ohio State Medical Association and from the Academy of Medicine of Cleveland to the American Medical Association to hold its 1941 annual session in Cleveland and the invitation was supported by several delegates.

Dr. James T. Christison, Minnesota, in behalf of the Hennepin County Medical Society at Minneapolis, the Ramsey County Medical Society at St. Paul, and the Minnesota State Medical Association, invited the American Medical Association to hold its 1941 annual session in St. Paul-Minneapolis.

Dr. R. K. Packard, Illinois, invited the American Medical Association to hold its 1941 annual session in Chicago.

On motion of Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Drs. George M. Fisher, New York, and Clyde

L. Cummer, Section on Dermatology and Syphilology, and carried, the nominations were closed, and the Speaker stated that Cleveland, Detroit, St. Paul and Minneapolis, and Chicago were the cities placed in nomination for the 1941 annual session of the American Medical Association.

The Secretary announced that 167 delegates had been recorded present and that 129 votes had been cast, of which Cleveland received 70, Chicago 27, Detroit 22, and St. Paul and Minneapolis 10, and the Speaker declared that the House of Delegates had selected Cleveland for the 1941 annual session of the American Medical Association.

Message of Appreciation

Dr. Irvin Abell, President, moved that the House of Delegates express, on behalf of the American Medical Association, sincere thanks and appreciation to the members of the California Medical Association, particularly to those residing in San Francisco, Oakland and the adjacent cities, and still more particularly to the chairmen of the various committees who had worked so hard for the comfort, pleasure and entertainment of the members of the Association; also to the press and to the most courteous citizens of this city as well as to the Woman's Auxiliary of the American Medical Association for their gracious hospitality extended during the session. The motion was seconded by Dr. Gunnar Gundersen, Wisconsin, and carried by a rising vote.

The House of Delegates adjourned sine die at 4:45 p. m.

REGISTRATION AT SAN FRANCISCO

The total registration at the San Francisco session, June 13 to 17, 1938, was 6,034. Below are given two summaries—one by states and one by sections:

Registration by States

Alabama	17	Nevada	38
Arizona	76	New Hampshire	4
Arkansas	13	New Jersey	38
California	3,143	New Mexico	13
Colorado	102	New York	205
Connecticut	22	North Carolina	10
Delaware	2	North Dakota	14
District of Columbia	42	Ohio	154
Florida	25	Oklahoma	56
Georgia	31	Oregon	167
Idaho	40	Pennsylvania	122
Illinois	236	Rhode Island	3
Indiana	66	South Carolina	6
Iowa	76	South Dakota	10
Kansas	60	Tennessee	34
Kentucky	35	Texas	167
Louisiana	39	Utah	86
Maine	4	Vermont	6
Maryland	30	Virginia	30
Massachusetts	63	Washington	173
Michigan	98	West Virginia	13
Minnesota	101	Wisconsin	58
Mississippi	5	Wyoming	16
Missouri	95	Miscellaneous	89
Montana	30		
Nebraska	71	Total	6,034

Registration by Sections

Practice of Medicine	1,876
Surgery, General and Abdominal	1,190
Obstetrics and Gynecology	423
Ophthalmology	301
Laryngology, Otology and Rhinology	227
Pediatrics	253
Pharmacology and Therapeutics	37
Pathology and Physiology	176
Nervous and Mental Diseases	217
Dermatology and Syphilology	182
Preventive and Industrial Medicine and Public Health	168
Urology	210
Orthopedic Surgery	150
Gastro-Enterology and Proctology	139
Radiology	213
Two or more sections or no section marked	272
Total	6,034

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

District Meeting.—The First Councilor District Medical Society was addressed in Paragould May 12 by Drs. John E. McGuire, Piggott, on scarlet fever; Thomas F. Hudson, Luxora, the black widow spider bite; Bonny M. Stevenson, Marion, the problem of syphilis; Robert H. Willett, Jonesboro, the relative value of high voltage roentgen therapy in uterine hemorrhages, and Martin E. Blanton, Jonesboro, eye injuries. Dr. Robert J. Haley, Paragould, gave the address of welcome.

CALIFORNIA

Mussel Quarantine.—The state department of health has established a quarantine on mussels from the southern boundary of Los Angeles County to the Oregon line, exclusive of San Francisco Bay. The quarantine prohibits the taking, sale or offering for sale of mussels growing within the designated area. It will continue through July, August and September.

State Medical Election.—Dr. Charles A. Dukes, Oakland, was chosen president-elect of the California Medical Association at its recent annual meeting in Pasadena and Dr. William W. Roblee, Riverside, was installed as president. Dr. George H. Kress, Los Angeles, was elected secretary-treasurer and director of public relations, succeeding Dr. Frederick C. Warnshuis, effective July 1, and reelected editor of *California and Western Medicine*.

DISTRICT OF COLUMBIA

Personal.—Capt. Samuel Ross Taggart, medical detachment, 260th coast artillery, District of Columbia National Guard, received the Soldier's Medal April 21 for heroism in rescuing a man from drowning at Virginia Beach, Va.—Mr. Theodore Wiprud, newly appointed executive secretary of the Medical Society of the District of Columbia, was guest of honor at a reception given by the society June 3.—Leland Wilbur Parr, Ph.D., has been promoted to professor of bacteriology at George Washington University School of Medicine.

GEORGIA

New Director of Division of Malaria.—Justin M. Andrews, Sc.D., associate professor of protozoology, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, has been appointed director of the division of malaria investigation of the Georgia State Department of Health.

Special Society Elections.—Dr. Cornelius F. Holton, Savannah, was elected president of the newly organized Industrial Surgeons Association at its meeting in Augusta; Dr. Robert L. Rhodes, Augusta, is vice president and Dr. John W. Simmons, Brunswick, secretary-treasurer. The new society will meet jointly with the Insurance Claim Agents' Association of the state and the Georgia Manufacturers' Association in handling the problems of industrial claims.—Dr. Lewellyn H. Muse, Atlanta, was named president-elect of the Georgia Pediatric Society at its annual business meeting in Augusta. Dr. Charles Hall Farmer, Macon, was installed as president, succeeding Dr. Roger W. Dickson, Atlanta.

ILLINOIS

New Buildings at State Hospital.—A group of thirteen buildings was dedicated at the Dixon State Hospital, Dixon, May 20. The buildings were recently completed at a cost of \$1,250,000, financed by federal public works funds. Begun in 1927, the project includes an administration building, a nurses' home, two infirmaries, eight cottages for patients and a "maximum security" building or prison, it was reported. The cottages for patients are one story high, of brick, each unit being built in a series of wings. The new facilities will accommodate 1,200 additional patients.

Chicago

Competition Open for Prize.—The Institute of Medicine of Chicago announces that competition for the 1938 Joseph A. Capps Prize is open to graduates of Chicago medical schools who completed their internship or one year of laboratory work in 1936 or thereafter. The prize of \$400 is awarded for the

most meritorious investigation in medicine or in the specialties; investigation may also be in the fundamental sciences, provided the work has a definite bearing on some medical problem. Manuscripts should be submitted to the Institute of Medicine of Chicago, 86 East Randolph Street, not later than December 31.

Apprehend Robber of Pregnant Women.—Basil Lezak, 304 West Division Street, was arrested on the street June 3. Lezak, who was carrying a physician's bag, confessed to the police that he had been victimizing pregnant women under the representation that he was sent by the city or state health department, by some hospital in the vicinity or by the WPA to examine them. About two years ago he was placed on six months' probation for treating persons with medicine composed of some vegetable extract, it was reported. He was sentenced June 10 to six months in the house of correction on each of two counts of petty larceny.

INDIANA

Society News.—Dr. Roscoe L. Kleindorfer, Evansville, discussed "First Aid Treatment of Injuries and Burns" before the Knox County Medical Society in Vincennes recently.—At a meeting of the Monroe County Medical Society in Bloomington Dr. Paul Merrell, Indianapolis, spoke on "Thoracic Surgery."—A recent meeting of the Hancock County Medical Society was addressed in Greenfield by Dr. Martin H. Fischer, Cincinnati, on "Physiologic Treatment of Heart Disease."—The Tippecanoe County Medical Society was addressed in Lafayette recently by Dr. Harry E. Mock, Chicago, on "Conservative Treatment of Gallbladder and Appendicitis."—Dr. Harold M. Trusler, Indianapolis, discussed "Treatment of Extensive Burns" before the Delaware-Blackford Medical Society in Muncie recently.—At a meeting of the Henry County Medical Society in Newcastle Dr. James H. Stygal, Indianapolis, spoke on pneumothorax.—Dr. Stanley P. Reimann, Philadelphia, discussed "The Diagnosis of Secondary Breast Tumors and Relation of Hormones to Cancer" before a joint meeting of the Fort Wayne and St. Joseph county medical societies in Fort Wayne recently. He conducted a clinic in the afternoon and addressed a public meeting in the evening.—The Gibson County Medical Society was recently addressed in Princeton by Dr. Laman A. Gray, Louisville, Ky., on "Leukorrhea and Office Gynecology."

IOWA

Smallpox Regulations Revised.—Regulations by the state department of health about smallpox have been revised to place primary emphasis on successful vaccination or revaccination and on isolation of active cases and of susceptible persons. The new regulations permit the breadwinner to enter and leave his home to continue the support of his family, provided he shows definite evidence of immunity to smallpox. Persons having the disease will be isolated for a minimum period of fourteen days. Children who have been exposed to smallpox but who have not been successfully vaccinated, previously or within seventy-two hours after initial exposure, will be isolated for a minimum period of twenty-one days. It is expected that the new regulations will increase attention to specific means of prevention, applied early in life and repeated before and after admission to school. During the thirty year period 1908-1937, officially reported cases of smallpox in Iowa totaled 50,303; of these 207 persons died.

LOUISIANA

Society News.—The Orleans Parish Medical Society was addressed June 13 at the U. S. Marine Hospital, New Orleans, by P. A. Surg. Paul E. Walker on "Pontocaine Anesthesia"; P. A. Surg. Joseph G. Pasternack, "Unusual Bone Tumors"; and P. A. Surgeon (R.) Henry D. Stroupe and Asst. Surg. (R.) William M. Boles, "Treatment of Corneal Ulcer with Fever Therapy." The society was addressed May 9 by Drs. Edwin A. Socola on "Banana and Banana Powder Therapy in Diarrheal Diseases of Infants and Young Children"; Dean H. Echols, "Ruptured Intervertebral Disk as a Cause of Sciatic Pain," and Leo N. Elson, "Treatment of Tularemia."

MARYLAND

Dr. Maxcy Joins Epidemiology Department at School of Hygiene and Public Health.—Dr. Kenneth F. Maxcy has resigned as professor and head of the department of bacteriology at Johns Hopkins University School of Hygiene and Public Health to become professor and head of the department of epidemiology. Dr. Maxcy joined the Johns Hopkins staff in 1937 after resigning as professor and head of the department of preventive medicine and public health at the University of

Minnesota Medical School, Minneapolis. He graduated from the Johns Hopkins school of medicine in 1915. He is a scientific director of the International Health Division of the Rockefeller Foundation.

MICHIGAN

Personal.—Dr. Anthony J. J. Rourke, assistant superintendent, Vanderbilt Clinics, Presbyterian Hospital-Columbia University Medical Center, New York, has been appointed assistant director of the University Hospital, Ann Arbor, succeeding George P. Bugbee, who will become superintendent of the Cleveland City Hospital. The change was effective July 1.

Changes at the University.—The following promotions at the University of Michigan Medical School, Ann Arbor, were recently announced:

- Dr. Herman M. Pollard to assistant professor of internal medicine.
- Dr. Lloyd F. Catron to assistant professor of pathology.
- Dr. Cameron Haight to associate professor of surgery.
- Dr. Jerome W. Conn to assistant professor of internal medicine.
- Dr. Isadore Lampe to assistant professor of roentgenology.

New Institute for Neuropsychiatry.—Ground has been broken for the new Neuropsychiatric Institute at the University Hospital, Ann Arbor. The building will be in the form of a wing to the north of the University Hospital and will be connected to the main building by corridors. The main section will be five stories high, flanked on each end by pavilions three stories high. The fourth floor of the new building will be on the level of the first floor of the main hospital. Provision will be made for the care of sixty-three adults and twenty children. There will be facilities for occupational therapy, physical therapy and hydrotherapy. The neuropathologic and research laboratories will be on the first floor of the new building. According to the *University Hospital Bulletin* the new unit is designed to form a center for the diagnosis, care and active treatment of forms of incipient mental disease which are not likely to receive adequate care until a state of more profound disability is reached. Only patients who are ready to come on a voluntary basis are treated, entering through the regular admitting department of the University Hospital.

MINNESOTA

Society News.—Chauncey Leake, Ph.D., San Francisco, gave a Mayo Foundation lecture at the Mayo Clinic, Rochester, June 6 on "Pharmacologic Aspects of Central Nervous System Activity." Dr. Owen H. Wangenstein, Minneapolis, gave a lecture May 19 at the clinic on "The Problem of Therapy in Acute Intestinal Obstruction."

Personal.—Dr. Frank C. Mann, Rochester, received the honorary degree of doctor of laws from his alma mater, Indiana University, Bloomington, Ind., at its commencement exercises June 13, at which he delivered the annual address. Dr. Mann will deliver a lecture before the Royal College of Surgeons, London, in July on "The Etiology of Peptic Ulceration."—Dr. Ralph X. Rossen, St. Peter, has been appointed superintendent of the state hospital at Hastings to succeed William J. Yanz, who has resigned after thirty-eight years' service. The change was effective June 30.

Ten Years for Illegally Obtaining Morphine.—Katherine Burkhardt pleaded guilty June 8 to a charge of obtaining morphine by fraud, deceit, misrepresentation and subterfuge and was sentenced to a term of not to exceed ten years in the Women's Reformatory at Shakopee. A drug addict, the defendant is the first person to be prosecuted for obtaining morphine by fraud or misrepresentation under the Minnesota Uniform Narcotic Drug Act, passed in 1937. The maximum penalty for a violation of the act is five years' imprisonment in a state penal institution. In this case the defendant received a ten year sentence because she had two prior convictions for felonies in the U. S. District Court. The woman obtained nineteen prescriptions for a total of 233 1/4 gram morphine sulfate tablets from six Minneapolis physicians between March 26 and 30. She obtained these prescriptions by misrepresenting her physical condition and falsifying her name and address. She used many aliases in obtaining the prescriptions. She stated that her maiden name was Mahoney, that her married name was Burkhardt and that she had been divorced in 1926. She admitted that she had been addicted to the use of morphine for sixteen years. She claimed that she suffered from chronic asthma, that she had a tumor on her spine and suffered from adhesions following an operation. In 1933 the defendant was sentenced in the federal court in Minneapolis to a three year term in the Federal Industrial Institution for Women at Alderson, W. Va., for violation of the Harrison Narcotic Act; in 1936 she was sentenced in the federal court at St. Paul to serve ten months in the Minneapolis Work House for a similar offense.

MISSISSIPPI

Changes in State Department of Health.—Dr. Henry C. Ricks, for ten years director of county health work of the state department of health, Jackson, has been appointed director of the state hygienic laboratory, effective May 1, following the retirement of Dr. Theodore W. Kemmerer. Dr. John A. Milne will succeed Dr. Ricks as director of county health work and continue to serve in his present position as director of maternal and child welfare division and health education. Dr. Kemmerer has served as director of the hygienic laboratory for fourteen years.

MISSOURI

Physician Given Civic Award.—Dr. Avery P. Rowlette, medical director of City Hospital and assistant professor of clinical surgery, Washington University School of Medicine, St. Louis, was presented May 19 with the distinguished service award of the U. S. Junior Chamber of Commerce for outstanding civic service in St. Louis during 1937. The award, a gold key, is given annually to a St. Louisan under 36 years of age who is chosen by the Young Men's Division of the chamber of commerce. Dr. Rowlette was cited for his work on the new psychopathic clinic now under construction, the new Homer G. Phillips Hospital for Negroes, and his services as medical director during the Southeastern Missouri floods in the early part of 1937. He graduated at Washington University School of Medicine in 1929.

Society News.—Dr. Charles T. Reid, Joplin, discussed "Tinnitus Aurium" before the Jasper County Medical Society in Joplin recently.—At a meeting of the Cooper County Medical Society recently Dr. Eugene P. Hamilton, Kansas City, spoke on "Diagnosis and Treatment of Appendicitis" and Dr. Dudley S. Conley, Columbia, "Some Problems of Our Medical Organizations." Dr. Conley addressed a recent meeting of the Ninth Councilor District Medical Society at Rolla and Dr. Edwin Lee Miller, Kansas City, "Hepatorcnal Syndrome in Relation to the Liver Death." The society was the guest of the Phelps-Crawford County Medical Society.—The Trudeau Club, St. Louis, was addressed May 5, among others, by Dr. Israel J. Flance on "Postmortem Incidence of Tracheobronchitis."—Dr. Roscoe L. Scnsenich, South Bend, Ind., discussed "The Social Aspects of Sickness" before the Jackson County Health Forum recently in Kansas City.

NEBRASKA

Honorary Members of State Association.—At a meeting of the council of the state medical association the following were voted honorary members: Drs. Rudolph Rix, Omaha; Don F. Morris, Lewellen; Arthur E. Cook, Randolph; Martin L. Sparks, Bloomington; John A. Waggencr, Humboldt, and George J. Rubelman, Tecumseh.

Society News.—At a meeting of the Omaha-Douglas County Medical Society recently Drs. Perrin H. Long, Baltimore, discussed sulfanilamide and Willis D. Wright, Omaha, "The Anemias Associated with Hypothyroidism."—A symposium on cancer was presented before the Dawson County Medical Society in Lexington recently by Drs. Howard B. Hunt, James Perry Tollman and Charles W. McLaughlin Jr., all of Omaha. Dr. McLaughlin also discussed surgery in children.—Dr. William J. Arrasmith, Grand Island, addressed the Four County Medical Society in Spalding May 5 on goiter.—The Platte-Loup Valley Medical Society was addressed at Columbus May 11 by Dr. James E. M. Thomson, Lincoln, on "Fractures of the Foot and Ankle."

Annual Assembly.—The sixth annual assembly of the Omaha Mid-West Clinical Society will be held at the Hotel Paxton, Omaha, October 24-28. In addition to lectures by members of the faculties of Creighton and Nebraska universities, the guest speakers will include:

- Dr. Henry L. Bockus, Philadelphia, medicine.
- Dr. Robert T. Frank, New York, gynecology and obstetrics.
- Dr. Cameron Haight, Ann Arbor, surgery.
- Dr. Louis J. Hirschman, Detroit, surgery.
- Dr. Edward L. Jenkinson, Chicago, radiology.
- Dr. Foster Kennedy, New York, neurology.
- Dr. Gordon B. New, Rochester, Minn., otolaryngology.
- Dr. Oliver S. Ormsby, Chicago, dermatology.
- Dr. Oliver H. Perry Pepper, Philadelphia, medicine.
- Dr. Heyworth N. Sanford, Chicago, pediatrics.
- Dr. Alfred R. Shands Jr., Wilmington, Del., orthopedic surgery.

A symposium on anesthesia will be presented by Drs. John S. Lundy, Rochester; Kenneth C. McCarthy, Toledo; Archibald Ross McIntyre, Omaha; John A. Moffitt, Oklahoma City, and Ralph M. Waters, Madison, Wis.

NEW HAMPSHIRE

Industrial Survey.—The state board of health announced in its May bulletin that a preliminary study of industries in New Hampshire with reference to occupational disease is in progress. The survey is the result of a recommendation made in the report of the Commission for the Study of Occupational Diseases in New Hampshire to the governor in 1937. It is the purpose of the study to obtain information concerning the environment associated with the various occupations which potentially may have an effect on the health of employees. The commission was formed in 1935.

NEW JERSEY

Hospital News.—A three months graduate course in gynecology and obstetric pathology is being conducted at the Margaret Hague Maternity Hospital, Jersey City, by Dr. Nicholas M. Alter and his associates. The Hospital of St. Barnabas, Newark, dedicated a new six story extension recently; the new addition accommodates eighty beds, operating, x-ray and maternity facilities and offices.

NEW YORK

Society News.—Dr. Fred W. Geib, Rochester, discussed "Brain Trauma" before the Medical Society of the County of Monroe at a meeting May 19. At a meeting of the society May 17 Dr. Arthur C. Christie, Washington, D. C., spoke on "Modern Trends in Medicine with Special Reference to Hospital Insurance."

Outbreak of Dysentery.—Seventy-one cases of gastrointestinal illness are known to have occurred between May 17 and 31 in two adjacent villages in Albany County, according to *Health News*. Specimens submitted from three persons during the acute stage yielded dysentery bacilli of the Sonne type. Water from the system which supplied both villages was found to be the one factor common to all cases. The water supply is taken from a creek and treated by chlorine but not filtered. Interruption in chlorination of the water was reported to have occurred on at least one occasion preceding the outbreak. Coincident with the failure of chlorination, a heavy rainfall also increased pollution of the source of supply.

Personal.—Dr. Karl Fischel, superintendent and medical director of the Will Rogers Memorial Hospital, Saranac Lake, N. Y., for four years, has resigned.—Oskar Baudisch, director of the research division, Saratoga Springs Commission, State of New York, has been appointed associate in biochemistry at the Albany Medical College; he will continue his connection with the commission.—Dr. Willard H. Sweet was guest of honor at a dinner in Croton, April 18, given by the medical board of Peekskill Hospital to mark his retirement as president of the board. Dr. William S. Bainbridge, New York, was the guest speaker.—Dr. Otto Pfaff, Oneida, was recently honored by Oneida friends with a testimonial dinner on completion of fifty years of medical practice.—James H. Foster, director of the child aid bureau of the state social welfare department, Albany, died May 9; he had served thirty years in the state's employ.—Mrs. Elizabeth Wilnot Newcomb, founder and first president of the Stony Wold Sanatorium, Lake Kushaqua, died May 30, aged 78. Mrs. Newcomb was instrumental in raising funds to build a cottage at the Trudeau Sanatorium, Saranac Lake, but on the advice of the late Dr. Edward L. Trudeau she purchased and remodeled as a sanatorium an old country hotel at Lake Kushaqua. It was incorporated as the Stony Wold Sanatorium in 1901.

New York City

Dr. Hammarsten Gives Janeway Lectures.—Einar Hammarsten, professor of chemistry, Caroline Medical and Surgical Institute, Stockholm, Sweden, gave the Edward Gamaliel Janeway Lectures at the Mount Sinai Hospital of New York, May 24, on "Duodenum and Its Associates, the Important Hormonal Centrum" and May 26, "Cell Structure: Functions of Nucleic Acid."

Changes at New York University.—Dr. Thomas A. Gonzales, chief medical examiner of the city, has been promoted from associate professor to professor of forensic medicine at New York University College of Medicine. Other promotions include those of Wendell J. S. Krieg, Ph.D., to assistant professor of anatomy and David Wechsler, Ph.D., assistant clinical professor of psychiatry.

Dr. Howard Fox Becomes Professor Emeritus.—Dr. Howard Fox has retired as professor of dermatology and syphilology at New York University College of Medicine with the title of professor emeritus. He had been associated with

the school since 1925. Dr. Fox was born in London, England, July 4, 1873; he received his degree in medicine at Columbia University College of Physicians and Surgeons in 1898 and later took graduate work in Berlin and Vienna. He taught at Dartmouth Medical College and the New York Polyclinic Medical School. During the World War he was commanding officer of base hospital number 136, Vannes, France. He served as president of the American Dermatological Association and of the American Board of Dermatology and Syphilology and in 1935 as honorary president of the ninth International Congress of Dermatology, Budapest. A testimonial dinner in his honor was held at Sherry's recently.

Personal.—Mary B. Stark, Ph.D., professor and head of the department of histology and embryology at the New York Medical College and Flower Hospital, received the honorary degree of doctor of science from Hamline University, St. Paul, June 6.—Dr. Herbert W. Wade, medical director, Leonard Wood Memorial in the Philippine Islands, was the guest of honor May 1 at a dinner given by the medical advisory board of the memorial at the Union League Club. The speakers included Frank R. McCoy, major general, U. S. Army, Washington, D. C., and Dr. Thomas Parran, surgeon general, U. S. Public Health Service, Dr. Wilbur A. Sawyer and Perry Burgess.—The staff of Mount Sinai Hospital, New York, gave a dinner June 2 to Dr. Israel Strauss in celebration of his sixty-fifth birthday and "in honor of his many years of distinguished service in the hospital and the profession," according to *Science*.—Dr. Jose Arcé, professor of surgery, University of Buenos Aires, was elected to honorary membership in the Medical Society of the State of New York at its recent annual meeting.—Dr. George Gray Ward, who retired in April as chief surgeon of the Woman's Hospital, was presented with a silver bowl at a recent reception in his honor; he has been made chief surgeon emeritus and consulting surgeon of the hospital.—Dr. Rufus I. Cole was honored recently at a dinner at the Rockefeller Institute for Medical Research; he was presented with a bound set of volumes of reprints from the institute hospital, from which he resigned as director last year.—Dr. Max Pinner, Ithaca, has been appointed chief of the division of pulmonary diseases at Montefiore Hospital, effective September 1.

NORTH CAROLINA

Changes at State Hospital.—Dr. John McCampbell, superintendent of the State Hospital, Morganton, has resigned from the position after thirty years of service and has been succeeded by Dr. Fonso B. Watkins, first assistant physician for twenty-six years. Dr. McCampbell was the second superintendent to head the hospital since its founding in 1883. The new superintendent is a native of North Carolina and a graduate of Jefferson Medical College, Philadelphia. Dr. Roy H. Long, a member of the medical staff, has been appointed to succeed Dr. Watkins with the title of assistant superintendent, and Dr. John R. Saunders, Lewiston, formerly a member of the staff, was appointed to fill the vacancy made by the changes.

OHIO

Graduate Day.—The Columbus Academy of Medicine sponsored a graduate day at the Scioto Country Club, Columbus, June 2. A golf tournament preceded the scientific program; speakers in the latter included:

Dr. Walter C. Alvarez, Rochester, Minn., Some Fairly Common but Usually Unrecognized Causes of Abdominal Discomfort.

Dr. Roy D. McClure, Detroit, Acute Pancreatitis.

Dr. Charles E. Galloway, Evanston, Ill., Prevention and Treatment of Puerperal Fever.

These speakers also addressed the evening session: Dr. Alvarez, "Constipation and Diarrhea"; Dr. McClure, "Modern Treatment of Burns," and Dr. Galloway, cervical lesions and an exhibit of colored photography of the cervix.

District Meetings.—The Eighth Councilor District Medical Society were guests of Dr. Louis Mark and the Rocky Glen Sanatorium at McConnellsville, June 23, for the annual midsummer meeting. The speakers included Drs. Louis J. Roth, Columbus, on "Educational Campaign Against Syphilis in Columbus" and George W. Crile, Cleveland, "Clinical Aspects of Essential Hypertension and Recurrent Hyperthyroidism."—The Second Councilor District of the Ohio State Medical Association held a meeting in Dayton recently. The guest speakers were Drs. Claire L. Straith, Detroit, who spoke on "Crossroad Surgery" and "Plastic Surgery of the Head and Face"; Pascal Brooke Bland, Philadelphia, on "Prevention of Uterine Cancer," and Gerald S. Shibley, Cleveland, "Diagnosis and Treatment of Pneumonia." Dr. John B. Alcorn, Columbus, president of the state association, and Mr. Charles S. Nelson, Columbus, executive secretary, spoke on organization activities.

OREGON

Hospital News.—Plans are under way to present the sanatorium now under construction at McCredie Hot Springs to the University of Oregon as soon as the buildings are finished.

Plague Infection.—Plague infection has been proved in tissue from one *Citellus oregonus* found dead April 23, 7 miles northwest of Hereford, Baker County, according to *Public Health Reports*. It was also proved in fifty-one fleas collected May 2 from eighty-eight of the squirrels in the same region.

PENNSYLVANIA

District Meetings.—The first annual meeting of the Twelfth Councilor District Medical Society was held in Dallas June 29. The speakers included Drs. Chauncey L. Palmer, Pittsburgh, on "Concentrating on Constructive Public Health Activities" and Charles H. Goodrich, Brooklyn, "Prevention of Injuries and Chronic Diseases and the Economics Related Thereto." —At the annual meeting of the Fourth Councilor District Medical Society in Pottsville June 30 the speakers included Dr. Emil Novak, Baltimore, on "Use of Endocrine Substances in Treatment."

Philadelphia

Personal.—Dr. William Egbert Robertson has been appointed chief medical director of the Northeastern Hospital and Dr. Alexander Silverstein consulting neurologist.

Changes at Jefferson Medical College.—Dr. James Torrance Rugh has retired as professor of orthopedic surgery at Jefferson Medical College and has been named professor emeritus and consulting orthopedic surgeon to the college hospital. Dr. Rugh graduated at Jefferson in 1892. He has been a member of the orthopedic faculty at his alma mater for forty-six years. In 1934 the senior class of the college presented a portrait of Dr. Rugh to the college. The following changes in the faculty during the past session are reported among others:

Dr. John B. Flick, clinical professor of surgery.
Dr. Lewis C. Scheffey, clinical professor of gynecology.
Dr. B. B. Vincent Lyon, associate professor of medicine.
Dr. Garfield G. Duncan, assistant professor of medicine.
Dr. Abraham Cantarow, assistant professor of medicine.
Dr. Victor G. Haury, assistant professor of pharmacology.
Dr. Baxter L. Crawford, assistant professor of pathology.

Pittsburgh

Society News.—Dr. Herbert Windsor Wade, Culion, P. I., addressed the Pittsburgh Academy of Medicine May 6 on "Leprosy as a World Problem." Dr. Harry M. Little, among others, addressed the academy recently on "The Child Guidance Center: Its Sphere of Usefulness to the Medical Profession." —The Allegheny County Medical Society was addressed May 17 by Drs. Thomas L. McCullough on "Treatment of Acute Suppurative Fulminating Fronto-Ethmoiditis" and Roy R. Snowden, "Allowing for Physiologic Adjustment in Establishing the Diet in Diabetes Mellitus." —At a meeting of the General Health Council in Pittsburgh May 12 Dr. Thomas Parrau, Washington, D. C., surgeon general, U. S. Public Health Service, spoke on "Venereal Disease Control" and Mr. Bleecker Marquette, executive secretary, Health Federation of Cincinnati, "The Community Value of a Health Council."

SOUTH CAROLINA

State Medical Election.—Dr. Douglas Jennings, Bennettsville, was chosen president-elect of the South Carolina Medical Association at its annual meeting in Myrtle Beach May 17-19 and Dr. James R. Des Portes, Fort Mill, was installed as president. Dr. George E. Thompson, Spartanburg, was chosen vice president, and Dr. Edgar A. Hines, Seneca, was reelected secretary-treasurer. The 1939 session will be held in Spartanburg.

SOUTH DAKOTA

Personal.—Dr. Edmund Stephen Donohue, Gregory, has been appointed superintendent of the Gregory County Board of Health.

Meeting of Academy of Science.—Ward L. Miller, Ph.D., State College, Brookings, was elected president of the South Dakota Academy of Science at its annual meeting at Yankton College recently. Vice presidents are Walter V. Sebright, Ph.D., Vermillion, and Alvin L. Moxon, State College. Arthur L. Haines, A.M., Vermillion, is the secretary. David D. Whitney, Ph.D., professor of zoology, University of Nebraska, was the guest speaker; his subject was "Heredity in Man."

TENNESSEE

Dr. G. Canby Robinson Honored.—A dinner in honor of Dr. G. Canby Robinson, Baltimore, was given, June 7, by members of the faculty of Vanderbilt University School of Medicine, Nashville, where Dr. Robinson served as dean from 1921 to 1929. Dr. Charles Sidney Burwell, dean, Harvard University Medical School, Boston, and formerly head of the department of medicine at Vanderbilt, was toastmaster. A portrait of Dr. Robinson, painted by Thomas Corner of Baltimore, was presented to the university on behalf of friends, by Dr. Ernest W. Goodpasture, professor of pathology. The portrait will be hung in the school of medicine. A book of clippings and photographs showing the progress of the school from its founding until the present, and including signatures of all guests at the dinner, was presented to Dr. Robinson. The speakers included Drs. Waller S. Leathers, dean of the school, William H. Witt, Hugh J. Morgan and Glenn E. Cullen, Ph.D., director of the Pediatric Research Institute of Cincinnati and formerly professor of chemistry at Vanderbilt.

TEXAS

Hospital News.—Dr. Elmer W. Jones, Wellington, who has owned and operated the Wellington Hospital for many years, recently gave the entire plant to the Sisters of St. Dominic, it is reported. —The George A. Griffith Memorial Hospital, a unit of the Sanatorium of Paris, was dedicated recently. The new building, constructed at a cost of \$50,000, will be used for children up to 15 years of age.

VIRGINIA

Society News.—Drs. Chevalier Jackson and John A. Kolmer, Philadelphia, addressed the Roanoke Academy of Medicine recently on "Diverticulum of the Hypopharynx" and "Infection, Immunity and Specific Treatment of Lobar Pneumonia" respectively.

Portrait of Dr. Flippin.—An oil painting of Dr. James Carroll Flippin, dean and professor of internal medicine, University of Virginia Department of Medicine, Charlottesville, has been presented to the university by the alumni, and the graduating class of 1938. The portrait was presented by Mr. James B. Black, president of the senior medical class. Dr. Flippin received the honorary degree of doctor of science from the university at its commencement exercises June 7.

Personal.—Dr. Harold W. Kinderman, Wicomico Church, retired in 1936 from the U. S. Army Medical Corps, has been appointed superintendent of Dixie Hospital, Hampton. —Dr. Ennion S. Williams, Richmond, was recently appointed medical director of the Life Insurance Company of Virginia, succeeding the late Dr. Charles L. Rudasill. —Alton D. Brashear Jr., D.D.S., instructor in anatomy at Louisiana State University Medical Center, New Orleans, has been appointed an assistant professor of anatomy at the Medical College of Virginia. —Dr. Charles L. Savage, Charlottesville, recently director of the health unit for Tazewell, Russell and Buchanan counties, has been appointed director of the Hanover County health unit with headquarters in Ashland.

WEST VIRGINIA

Obstetric Pilgrimage.—The annual pilgrimage of the West Virginia Obstetrical and Gynecological Society to a recognized medical center was recently held in Cleveland. One day of specialized clinics was spent at each of the following: Maternity and St. Luke's hospitals and the Cleveland Clinic. The next session of the society, its fourth, will probably be held in either Cincinnati or Pittsburgh.

State Medical Meeting at White Sulphur Springs.—The seventy-first annual meeting of the West Virginia State Medical Association will be held in White Sulphur Springs July 11-13 under the presidency of Dr. Charles W. Waddell, Fairmont. Guest speakers will be:

Dr. Horace M. Korns, Iowa City, The Nature and Manifestations of Congestive Heart Failure.
Dr. Waltham Walters, Rochester, Minn., Hyperfunctioning Lesions of the Ductless Glands.
Dr. Louis H. Clerf, Philadelphia, Pulmonary Suppuration.
Dr. John C. Gittines, Philadelphia, Nonspecific Lung Infections.
Dr. Gordon F. McKim, Cincinnati, Nephropathy.
Dr. Henry S. Ruth, Philadelphia, Advantages Offered by an Organized Anesthetic Service.
Dr. Edward L. Campere, Chicago, Errors in Diagnosis or Treatment for Low Back Pain.
Dr. Nicholson J. Eastman, Baltimore, Pellets in Pregnancy.
Dr. Irvin Abell, Louisville, Ky., President of the American Medical Association, Surgical Treatment of Peptic Ulcer.

Dr. Cecil B. Pride, Morgantown, will deliver the oration on surgery on "Injuries of the Knee Joint," and Dr. Charles B. Chapman, Welch, the oration on medicine on "Human Blood

as a Therapeutic Agent." The West Virginia Industrial Physicians and Surgeons Association will meet Sunday evening July 10 with Dr. George H. Gehrmann, Wilmington, Del., as the guest speaker on "Industrial Medicine and Toxicology." The West Virginia Heart Association will meet Monday afternoon July 11 with Dr. Korns as the guest speaker on "The Effect of Pulmonary Emphysema on the Heart." The West Virginia Obstetrical and Gynecological Society will hold its annual meeting Thursday with Dr. Eastman as the guest speaker on "Pregnancy and Labor in the Bicornate Uterus." The annual convention banquet will be Wednesday evening.

Graduate Courses in Obstetrics and Pediatrics.—The West Virginia State Medical Association is sponsoring refresher courses in obstetrics and pediatrics to begin July 18 in two circuits. The courses will be given one day each week in each town for five consecutive weeks. The circuit in the northern part of the state will include the towns of Martinsburg, Keyser, New Martinsville, Weston and Fairmont; the southern circuit will consist of Logan, Welch, Beckley, Ronceverte and Fayette. Drs. Louis H. Douglass and Thomas Campbell Goodwin, Baltimore, will lecture on obstetrics and pediatrics, respectively, for the northern group; Drs. William F. Mengert, Iowa City, on obstetrics, and Lee Palmer, Louisville, Ky., on pediatrics in the southern towns. During the past two years these courses have been sponsored by the state health department.

GENERAL

Examination in Ophthalmology Postponed.—The American Board of Ophthalmology announces that the examination previously scheduled for November 15 at Oklahoma City has been canceled. Examinations are scheduled for New York October 7 and Washington, D. C., October 8.

Research Fellowships Available.—The Finney-Howell Research Foundation, Inc., Baltimore, announces that applications for fellowships next year must be in the hands of the foundation by Jan. 1, 1939. The appointments will be made the following March. Dr. William A. Fisher, 1211 Cathedral Street, Baltimore, is secretary of the foundation.

Refresher Course in Physical Therapy.—Didactic and clinical lectures, round table conferences, clinics and technical demonstrations will make up a course in physical therapy to be given before the annual session of the American Congress of Physical Therapy in Chicago September 7-10. Fundamentals will be reviewed but emphasis will be laid on the newer developments, according to the *Archives of Physical Therapy*. Fellows of the congress will be admitted to the course for a fee of \$20; for others the tuition charge will be \$25. Further information may be obtained from the American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago.

Fewer Automobile Fatalities.—According to the National Safety Council, in the first four months of 1938 there were 2,060 fewer traffic deaths than in the corresponding months of 1937, a 19 per cent reduction. The North Central states showed the greatest improvement with a drop of 25 per cent; the South Atlantic states had a reduction of 14 per cent, South Central states 10 per cent and Pacific Coast states 11 per cent. The Rocky Mountain states reported an increase of 13 per cent. Of forty-two states reporting for either three or four months of both this year and last, twenty-eight showed decreases or no change. Oregon led the list with a drop of 40 per cent. Michigan was second with 39 per cent.

Society News.—Dr. Louise C. Eisenhardt, New Haven, was elected president of the Harvey Cushing Society at its seventh annual meeting in Memphis, Tenn., April 21-23; Dr. Frank R. Teachenor, Kansas City, Mo., is vice president, and Dr. William J. German Jr., New Haven, secretary.—The Western Institute for Hospital Administrators will be held at Stanford University, Calif., August 8-19; the institute is sponsored by the American College of Hospital Administrators, the Association of Western Hospitals and the Association of California Hospitals, jointly with the university. Mornings will be devoted to lectures, afternoons to field trips to hospitals and evenings to panel discussions.

Men Chief Victims of Fatal Home Accidents.—A recent study of mortality among industrial policyholders of the Metropolitan Life Insurance Company revealed that fatal accidents in the home were one and one half times as frequent among men as among women in the range 15 to 64 years. Death records show that falls off roofs, ladders, porches and balconies were much more frequent among men, as were falls down stairs. Deaths from poisonous gas were three times as frequent among men. Illuminating gas was the lethal agency involved in three fifths of the deaths and automobile carbon monoxide gas in one fourth of the deaths among men. Firearms were the third

most important cause of mortality among men. Deaths involving the cleaning or careless handling of loaded guns caused 1.2 deaths per hundred thousand male policyholders but only 0.2 among women. Accidental burns, exclusive of those sustained in conflagrations, were the only type of home accident in which more women than men were injured fatally.

Changes in Status of Licensure.—The Oregon State Board of Medical Examiners reports the following:

Dr. Joseph A. Wonderlick, Salem, license revoked April 6 for unprofessional and unlawful conduct.

The Colorado State Board of Medical Examiners reports:

Dr. Taber A. Darling, Fort Lupton, license restored April 5.

The State Medical Board of Ohio took the following action at a meeting April 5:

Dr. William E. Leever, Cincinnati, license suspended one year for violation of the Harrison Narcotic Act.

Dr. Mounce E. Byrd, Burbank, license suspended on his conviction of criminal abortion, for the period of his incarceration.

The Board of Medical Examiners of Maryland, Baltimore, announced the following action:

Dr. Robert Xavier Giering, Baltimore, license revoked March 4 because he was twice convicted of practicing criminal abortion and of having been found guilty of using the mails to obtain money under false pretenses.

Dr. Allan Hamilton Uhler, Baltimore, license revoked March 4 on account of his having been convicted of the larceny of two microscopes and of having used the mails to defraud.

The Massachusetts Department of Registration in Medicine announces the following action:

Dr. Solomon Gobert, East Boston, Mass., license suspended for six months, March 17, for testimony in court.

CANADA

Society News.—Drs. Gordon Gordon-Taylor and John Beattie, both of London, England, addressed the Academy of Medicine of Toronto April 5 on "Injuries of the Abdomen" and "Neurogenic Factors in the Control of Gastric Motility, Secretion and Ulceration" respectively.—Dr. Philip A. Clyde Cousland, Victoria, addressed the Victoria Medical Society April 7 on allergy.

Rural Health Contest Winner.—The first rural health conservation contest in Canada, held during the past year by the Canadian Public Health Association in cooperation with the American Public Health Association, was won by the St. Jean-Iberville-Laprairie-Napierville health unit, St. Jean, Que. Dr. Jean H. Maynard is the health officer. The U. S. Chamber of Commerce sponsored the contest and funds were supplied by the W. K. Kellogg Foundation. A plaque was to be awarded to the winning unit at the annual meeting of the Canadian Public Health Association in Halifax June 20-22.

FOREIGN

Personal.—Dr. I. Snapper, professor of pharmacology and pathology in the University of Amsterdam and director of the clinic for internal medicine in the Wilhelmina Hospital since 1919, has been appointed professor of medicine at Peiping Union Medical College, Peiping, China.

The Lister Medal.—Dr. René Leriche, professor of clinical surgery, University of Strasbourg, will receive the Lister Medal for 1939 and will deliver the Lister Memorial Lecture in 1939, according to *Science*. This is the sixth occasion of the award, which is made by a committee representing the Royal Society, the Royal College of Surgeons of England, the Royal College of Surgeons in Ireland, and the universities of Edinburgh and Glasgow. The medal is given in recognition of distinguished contributions to surgical science.

Congress on Tropical Medicine and Malaria.—The third United International Congress of Tropical Medicine and Malaria will be held in Amsterdam September 24 to October 1 under the auspices of the Netherlands Society of Tropical Medicine. Dr. G. Gryn's is the general president and Dr. N. H. Swellengrebel the president of the malaria congress. The general secretary is Dr. Ch. W. F. Winckel, Institute of Tropical Hygiene, Mauritskade 57, Amsterdam O. The secretary of the committee for the United States is E. Harold Hinman, Ph.D., Wilson Dam, Ala.

Society News.—The International Federation for Documentation will hold its fourteenth International Conference on Documentation at Lady Margaret Hall, Oxford, England, September 21-26, under the presidency of Sir William Bragg.—The fourth annual Congress of Electroradiologists of the French Language will be held in Paris October 5-8. At the opening session Prof. Frederic Joliot-Curie will speak on "Neutrons and Artificial Radio-Elements; Biologic Application, Therapeutic Hypotheses." Information may be obtained from Dr. Delherm, president of the congress, 1 Rue Las Cases, Paris 7.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 4, 1938.

The Radiotherapy of Brain Tumors

At the Society of Radiotherapists, W. C. Northfield opened a discussion on benign brain tumor, which he said comprised not only encapsulated ones, such as meningioma and acoustic neurinoma, but certain slowly growing gliomas. On the other hand, the spongioblastoma and the medulloblastoma were intensely malignant, and with these hopeless tumors the neurosurgeon turned to the radiotherapist. Other tumors might be considered malignant because of their position in the brain though histologically fairly benign. These included diffuse astrocytoma of the pons, speech centers or basal ganglions. For such tumors surgical extirpation was not feasible. In the choice of case for radiotherapy there was the difficulty of being certain of the diagnosis. As a rule it was desirable to precede irradiation by an operation, to avoid the risk of leaving a benign tumor, to relieve the increased intracranial pressure and to secure a histologic diagnosis.

Robert McWhirter described his technic. The location and estimated area of the tumor were indicated by the neurosurgeon on roentgenograms of the skull in two planes, often on the ventriculograms. With this guide he made a chart of the portals of entry and the directions of the exposures. To prevent unpleasant reactions, the initial doses were much smaller than the subsequent ones. He was optimistic about the results of radiotherapy in ameliorating the general symptoms and improving the neurologic status. There was general agreement as to the radiosensitivity of such gliomas as medulloblastoma, spongioblastoma multiforme and certain types of astrocytoma. In a few cases inoperable meningioma had also proved responsive. In cases of pituitary adenoma headaches were relieved and vision and endocrine disturbances were improved. With acromegaly there was improvement even in the face, so that new dentures were necessary, and in the extremities, so that smaller shoes could be worn. A note of warning was sounded as to the susceptibility of healthy brain tissue to irradiation. In patients who eventually died, softening of the white matter had been found in areas of the brain in the line of treatment. Radiotherapy of brain tumors was less advanced than radiotherapy elsewhere, and the technic was in need of development.

Air Raid Precautions

In the House of Commons, the home secretary, Sir Samuel Hoare, said that we were getting near the half-way mark of the million volunteers for defense against air raids for which he appealed two months ago. First aid and antigas training had been given to 126,000 men and women, and in addition 11,000 physicians, 1,300 dentists and 22,000 nurses had passed through the air raids precautions course. He had already issued to the local authorities 300,000 gas masks for training. A survey has been made of the hospital accommodations of the country for dealing with casualties. It has been suggested that the casualties should be taken as quickly as possible outside the area of London attacks, as these might be so formidable that it would be difficult for the hospitals to carry on, and that casualty hospitals should be formed on the periphery of London and victims moved from them into the country. The government has formed a committee consisting of hospital experts, the director of medical services in the war office and the principal medical officer of the London County Council to give advice. Directions are being issued to the hospitals as to the precautions they should take against air raids. Plans for the evacuation of the population from London and par-

ticularly for the evacuation of children are being considered. Another danger from air attack is interference with our immense sea-borne food supply. Plans for diverting shipping from the harbors of the east coast to the less dangerous ones on the west coast have been drawn up. Another precaution, adopted for the first time in this country, is the purchase by the government of large supplies of food for storage, some of which have already been delivered. The supplies consist of three commodities which can be stored for a long time without deterioration—wheat, sugar and whale oil. The wheat will be stored, so far as possible, in ports on the west coast. Whale oil was selected as supplying one of our greatest necessities—fat. It is of all oils the easiest to store and will keep for years without deterioration. It is a basic component of margarin.

Austrian Medical Refugees

The spread of political persecution from Germany to Austria has exercised the profession as to the prospects of their Austrian colleagues. Sigmund Freud has arrived in London from Vienna to take up residence with his son who lives here. He has been given a permanent permit by the government. He recently celebrated his eighty-second birthday, and his intention is to spend the remainder of his days here in study and research. He was met at the station by Dr. Ernest Jones, an eminent pupil, who drove him to his destination.

Dr. J. A. Ryle, professor of medicine in the University of Cambridge, has written to the medical press on assistance to Austrian medical students. A letter has been circulated to the deans of the medical schools of the British Isles pointing out that, while there is general agreement that there is no room for any great increase in the number of foreign physicians allowed to practice in this country, and that the best we can do is to offer asylum to individuals, the question of the medical student seems to be in a different category. He wonders whether we might not make some effort to provide opportunities for a limited number of Austrian medical students in the British Isles. The London Hospital has undertaken to take one student free of charge for the whole of his medical curriculum, on the understanding that his board and lodging can be privately provided. Professor Ryle suggests that each medical school should undertake the free education of one student on these conditions. By the time he is qualified, the student would be eligible for naturalization.

PARIS

(From Our Regular Correspondent)

June 4, 1938.

Present Status of Vaccination Against Tetanus

The question of whether antitetanus vaccination is effective has been the subject of a number of papers read at the Académie de chirurgie of Paris during the last two years. Prof. G. Ramon of the Pasteur Institute of Paris read a paper at the May 18 meeting of the Académie de chirurgie, in which the comparative efficacy of antitetanus serum and tetanus toxoid was reviewed. Although the ability of the serum to prevent this type of infection can no longer be questioned, there are limitations to its efficacy. The passive immunity following the injection of antitetanus serum takes place almost immediately but is of short duration. "Serum sickness" follows the injection of the serum. That death can follow an injection cannot be denied. Inability to work because of a comparatively insignificant injury may be prolonged as the result of serum sequelae. On the other hand, one must bear in mind that tetanus is not uncommon as a complication of an insignificant injury or of wounds with which its occurrence is not to be expected. It is evident that the routine use of the antitetanus serum presents a difficult problem, whereas vaccination with the tetanus toxoid does not expose the worker to any local or general reactions.

Tetanus toxoid does not immunize the subject until after a certain interval, but the immunity is permanent. The most important factor is that the toxoid increases the resistance of the patient and its administration is followed by a special ability of the organism to react when the injection is repeated. Rapid progress has been made recently in bestowing immunity on a large percentage of vaccinated persons. Transitory passive immunity follows repeated injections of the serum, but successive injections of the toxoid at more or less prolonged intervals create an ever increasing active immunity which is permanent. More than a million persons have been vaccinated with the toxoid in France, but not a single case of tetanus has been reported. The use of the toxoid in the prevention of tetanus deserves to be generally adopted. When the development of tetanus is to be feared, both the serum and the toxoid should be given. For children the injection of 3,000 units of serum is indicated, while for adults it is advisable to inject from 10,000 to 20,000 units. Fifteen minutes later 1 cc. of the toxoid should be injected, and in three weeks there should be a second injection, of 2 cc. of the toxoid. If possible a third and a fourth injection of the same dose of the toxoid should follow. If the injured person has previously been vaccinated, a single injection of 2 cc. of the toxoid suffices. If there is any doubt about a previous vaccination or the patient has lost a great deal of the antitoxin in the blood because of a severe hemorrhage, it is better to give also an injection of the serum. Vaccination by means of the toxoid calls for three injections and should be used as a matter of routine for all persons whose work exposes them to tetanus infection. For this reason the use of the toxoid is now obligatory for all soldiers. In the discussion, Dr. Louis Bazy stated that the principal arguments in favor of the toxoid are that it can be relied on to confer immunity in a far larger percentage of cases and that the immunity is not temporary, as is that produced by serum used preventively.

Prophylaxis Against Undulant Fever in France

At the May 17 meeting of the Académie de médecine of Paris a series of investigations on undulant fever were reported by Professor Lisbonne of Montpellier, in southwestern France. The research work was aided by the Rockefeller Foundation, which has established a center at Montpellier for this purpose. In 1924 the disease existed in only seventeen of the ninety departments of France. In 1938 this number has risen to seventy-six, the disease in all cases being confirmed bacteriologically. Infection of human beings by *Brucella abortus bovis* is not rare, and the center at Montpellier has found the disease in seventy cases from departments in northern, eastern and central France. In the South and Southwest, only *Brucella melitensis* has been observed in blood cultures. In three departments, in north-eastern, in eastern and in southeastern France, bovine brucellosis due to *Brucella melitensis* has been found. Direct infection of human beings ranks first as a mode of transmission, whereas infection by way of the alimentary tract ranks second. The lesser number of cases of the latter mode of transmission is the result of sterilization of contaminated milk, even in rural communities. Contact infection has been found to occur five times oftener than infection by ingestion of milk, cheese and other dairy products. General cleanliness, especially proper care of the hands, is less important in the prevention of infection due to *Brucella* than combating the disease at its source, that is, killing infected animals. The use of living vaccines for prophylactic purposes carries with it the danger of elimination of the bacteria and infection of healthy animals in contact with the vaccinated ones. Also there have been reports of infection of veterinary surgeons in handling living vaccines. Dead vaccines have not been found to be of any value. The ideal method would be to utilize nonvirulent bacteria. The Montpellier center, by combining injections of a nonvirulent

strain with injections of a glucidolipoid antigen of *Brucella melitensis*, has succeeded in successfully vaccinating guinea pigs in the majority of its experiments. In the discussion, Professor Lemierre of Paris stated that the cutaneous route of inoculation had been observed more frequently than any other at the contagious disease hospital here.

Action of Sulfanilamide on Experimental Pneumococcal Infections

At the May 24 meeting of the Académie de médecine of Paris, an extensive experimental study on the action of sulfanilamide was presented by Prof. Constantin Levaditi of the Pasteur Institute and his co-workers Vaisman and Krassnoff. In their earlier investigations the streptococcus was employed, and it was found that the action of sulfanilamide and similar preparations is proportional to the potential defensive powers of the organism. If this defense is lacking the therapeutic action of the drug will be inadequate. Complete sterilization can be expected only when both the index of the animal's resistance and the capsule formation—inhibiting and antitoxic properties of the newer drugs are at their maximum. In the present study the pneumococcus was selected because it possesses a tendency to capsule formation as a means of defense against the action of phagocytes and drugs which is much more marked than the streptococcus. Experiments were undertaken on mice. Three strains of pneumococci were chosen, a very virulent strain, a less virulent strain and a strain which was nonpathogenic and without a capsule. The drugs employed were 4-nitro-4'-acetylamino-diphenylsulfonamide and aurodetoxin, which according to the Gehes Codex is a compound of gold and a sulfur-rich keratin preparation of high molecular weight containing 12 per cent of gold (Vaisman). The cultures were injected intraperitoneally and the mice killed at varying intervals. From their first series of experiments, the authors concluded that preexisting encapsulation greatly increases the pathogenic action of the pneumococci. The capsule acts like an impermeable covering, which protects the pneumococci from being ingested by the phagocytes and favors multiplication of the pneumococci in the blood and tissues. The capsule-forming property of the pneumococcus plays the most important part in determining its virulence. In studying the mechanism of defense of the infected mice against nonvirulent and nonencapsulated pneumococci, it was found that specific defense of the blood serum against distinctly pathogenic and capsule-forming pneumococci, on the one hand, and phagocytosis, with its concomitant opsonic phenomena, on the other hand, have the principal roles. After this work had been done, the question was studied as to whether sulfanilamide and similar drugs have a bactericidal or bacteriostatic action.

The final conclusions of this investigation are as follows: The virulence of the pneumococcus is related more directly to the potential ability of this organism to form a capsule than to the phagocytic properties of the leukocytes. A strain of pneumococcus is pathogenic because it finds the materials in the body of the host which permit it to form a capsule. The various sulfur-containing newer drugs which are therapeutically active cause the pneumococcus to be more readily surrounded by the phagocytes, because these drugs act by creating an unfavorable medium for the formation of capsules by the pneumococci. This renders the bacteria an easy prey for the phagocytes. As a result of their previous studies of the action of sulfanilamide and similar drugs on the streptococcus and of their present investigation, Levaditi and his co-workers maintain that the drugs act (a) by being altered within the body, (b) by the ability of the body to regulate the rhythm of elimination of the drug, (c) by inhibiting multiplication of the bacteria, (d) by preventing capsule formation and (e) by aiding phagocytosis in destroying the bacteria temporarily or permanently.

BERLIN

(From Our Regular Correspondent)

May 10, 1938.

New Developments in the Problems of Heredity

There has been of late a reduction in the number of new publications and regulations in the field of genetics. Nevertheless, several new and interesting pronouncements and decisions on the problem of heredity have been made. Genetic-biologic examination was employed as a means of proof in a recent case of the disputed paternity of a child. The Reichsgericht, as supreme German tribunal, in a recent opinion states that genetic examination can be of decisive importance in cases of this sort and should be employed in all doubtful cases. In this particular case the blood type test had been without result and a genetic test had been resorted to as a further source of evidence: "Since the test is undoubtedly a proper source of evidence; since it is particularly applicable in the present case; since the result of the test should decide the paternity of the child." On the other hand, according to one high juridical authority the genetic test should not be evaluated as an exact scientific source of evidence in favor of or against an alleged progenitor, and its accuracy is not comparable to that of the blood type test. The genetic test, however, may furnish data which vary in significance according to other circumstances of a given case. It may frequently be useful as a secondary, supplementary test. The genetic test is based on a similarity of certain hereditary external characteristics in father and child. Comparative studies are made, for example, of the hair of the head, eyebrows, eyelashes, palpebral fissures, color of eyes, nose, possible harelip or cleft palate, fissura oris, chin, ears, pattern of papillary ridges on the finger pads, palmar and plantar surfaces, color of skin, form of clavicle and form of vertebral column.

Dr. Gross, director of the bureau of racial eugenic policy of the Nazi party, recently discussed the problem of choice of a marriage partner by siblings of congenitally diseased persons. In many circles it is feared that the determination of hereditary disease imposes on the siblings of the affected person at least a moral obligation not to marry. This apprehension is baseless. Usually a hereditary disease will be present in one member of a group of siblings, whereas the others show no signs of the disorder and are never found to have transmitted a predisposition to their offspring. Sterilization of the diseased person should by no means be considered a reflection on the healthy siblings. The marriage of the siblings of the sick person should of course take place only after thoroughgoing medical examination and certification of genetic fitness.

Blood Typing as Means of Forensic Proof

The national government has just issued a new law with regard to cases of doubtful paternity, which represents a practical application of the Nazi concept of genetics and race. Of particular interest to the medical profession is the stipulation that in such cases the court may order both blood type and genetic tests. Heretofore judicial authority to order tests of this sort was open to question. The new law makes no pronouncement on the evaluation of the testimony of the child's mother; accordingly such testimony remains the first consideration. It follows then that these tests will be resorted to only if the mother's testimony is unsatisfactory; for example, if she is deemed untrustworthy. The blood test thus becomes a secondary consideration, the genetic test a tertiary. The courts are now provided with clear rules of legal procedure with regard to this problem.

Legitimate and Illegitimate Children

In the year 1936 about 1,210,000 babies were born in wedlock; namely, about 14,700 more than in 1935, whereas the number of those born out of wedlock increased by only 215. Of infants born in the year 1936, 7.8 per cent were illegitimate, as against

7.9 per cent in 1935. The proportion of infants born out of wedlock has tended to decrease constantly and substantially since 1930; this decline continued in 1936. During the years from 1926 to 1930, 12.3 per cent of newly born babies were illegitimate. The marked decrease in the proportion of illegitimate babies was at first due to the fact that women born during the war period of low birth rate, from 1915 to 1919, had reached the age levels at which the bearing of illegitimate children is most frequent. Since 1933 the further recession in the number of babies born out of wedlock has been due to the increase in number of marriages, the increased fertility of marriages and the institution of government subsidies to couples contemplating marriage. In 1936 an especially noteworthy increase was observed in the number of children born to those couples who had married before 1933 and whose fecundity had been markedly on the decrease because of unsettled general conditions prior to the latter year. Marriages contracted before 1933, especially those contracted in the years from 1920 to 1926, in 1936 still showed, after a duration of from ten to sixteen years, an increase in births of approximately 3 to 8 per cent over the figure for 1935, which figure represented an increase of from 30 to 40 per cent over that for 1933. In the year 1937 the number of babies born in wedlock amounted, according to preliminary figures, to about 1,270,000; namely, 314,000 more than in 1933. In the four years from 1934 to 1937 the number of legitimate children born within the German reich, including the Saar district, exceeded by 1,166,000 the number who would have been born had the extremely low rate of a year such as 1933 continued. Of the foregoing number 1,130,000 were born alive. This increase in births permits the assumption that not only among younger couples but among older couples as well the desire for children is stronger than in the past.

Dr. Guenter K. F. Schultze, senior physician of the Women's Hospital of Berlin University, has made a comparative clinical study of legitimate and illegitimate births. His material consisted of 15,000 married primiparas and 12,000 unmarried primiparas. It was observed that with regard to several puerperal complications the unmarried women fared better than the married women. Premature rupture of the fetal membranes and eclampsia were both much less frequent among the unmarried than among the married women. Surgical interventions were less frequently indicated for the unmarried mother. Rupture of the peritoneum, as well as transverse presentation, was, on the contrary, more common among the unmarried women. In the war years, when wives were separated from their husbands, premature rupture of the membranes was of about equal frequency in the two groups of women studied. This shows with all the clarity of an experiment that coitus during pregnancy was the most common cause of premature rupture of the membranes among women whose husbands were called away to war. Eclampsia was due to insufficient nutrition during pregnancy, as well as to overwork and excess of bodily movement. The conditions under which many unmarried women live during pregnancy may conduce to eclampsia. With regard to the incidence of surgical operations, the unmarried primiparas were substantially better off than the married women. Most noteworthy was the great difference with respect to the incidence of deliveries in which forceps had to be employed. Comparison of the corresponding age groups of married and of unmarried primiparas plainly showed the unmarried mothers to be more liable to rupture of the peritoneum. According to statistics that cover several decades, the number of stillborn illegitimate infants is about 1 to 2 per cent greater than the number of stillborn legitimate infants. The high proportion of stillbirths among unmarried women recorded in the national statistics is not based on an especially greater frequency of puerperal complications; the data show on the contrary that in many important respects the unmarried mothers fare better than the married. The difference lies in the obstetric treatment of the homeless unmarried mother. The proportion of premature births

is twice as great among unmarried women as among married women. Accordingly, premature birth is the most important aspect of the whole problem of illegitimacy from the obstetric point of view. In addition, the illegitimate child is likely to present characteristic developmental deficiencies which have begun during the intra-uterine life; the smaller neonatal weight of illegitimate infants is one manifestation of their debility. It is indicated on the basis of the statistical data that the unmarried gravida ought to receive home care during the final months of pregnancy and should be hospitalized during confinement.

Campaign Against Misuse of Alcohol

An agreement has recently been effected between the German wine growers and the national fuhrer of physicians on the following principles relative to the use and abuse of alcohol: The campaign against drunkenness is a part of German public health policy. There is no objection to the use of alcoholic beverages but only to intemperance. Broadly speaking, every adult citizen may indulge liberally, moderately or not at all, as he chooses. On the other hand, abstinence is demanded of children under the age of 17, women during pregnancy and lactation, persons whose health is endangered by alcohol and, finally, persons whose occupations entail a particularly great responsibility, drivers of motor vehicles, for example, both before and during driving. In addition, the production, marketing and wide distribution of new sweet wines are recommended.

ITALY

(From Our Regular Correspondent)

May 28, 1938.

National Congress on Tuberculosis

The fourth national congress on tuberculosis was held at Tripoli; Prof. Raffaele Paolucci of the University of Bologna presided. The first theme concerned the prophylaxis and treatment of tuberculosis. Professor Morelli of Rome, director of a large sanatorium, said that hospitalization of the tuberculous patient is an axiom in prophylaxis. Early diagnosis in a high percentage of cases is another necessity; it is above all the duty of the antituberculosis dispensaries, which, the author suggested, ought to be supplemented by mobile municipal clinics which would collaborate as much as possible with the outpatient clinics of the university and other hospitals.

At the second session the topic tuberculous bacillema was developed by Professor Daddi of the Istituto Forlanini of Rome. He emphasized the inadequacy of testing with Loewenstein's culture medium, which method, although much used, contains sources of error. He criticized the composition of the culture medium and the preparatory treatment of the blood (according to Rondoni and Petraggiani the blood ought not necessarily to be deprived of hemoglobin). Loewenstein advises centrifugation of the blood in from 1,000 to 1,500 revolutions, whereas Besta has demonstrated the value of centrifugation of the blood at high velocity in short test tubes. Professor Daddi discussed the destiny of bacilli that are in the blood, as well as the formation of hematogenous metastases. The author cited Professor Morelli's concept of the filtering action of the lungs as an important factor in the arrest of bacterial emboli. Daddi's microscopic and bacteriologic investigations carried on in collaboration with Panà on cadavers of victims of phthisis showed that tubercle bacilli were present in the livers of 70 per cent and in the thoracic lymph nodes of 94 per cent. The spleens of 74 per cent were shown to be diseased by bacteriologic tests and the spleens of 30 per cent by microscopic tests. In many cases the bacillema had been unaccompanied by any clinical manifestations. Professors Mazzetti, Besta and Barchi objected to the method and conclusions of Loewenstein. Loewenstein considers bacillema a beneficent phenomenon even with those forms of pulmonary tuberculosis which are ordinarily considered of hematogenous origin and even after injections of epi-

nephrene. This is not at variance with the clinical and anatomic data which demonstrate the frequency of the hematic genesis of tuberculosis in the adult but only confirms the fact that it is difficult to detect the passage of the bacillus into the circulation. Such research is of scant clinical importance in the diagnosis and prognosis of pulmonary tuberculosis.

At the third session the theme prophylaxis against prenatal tuberculosis was discussed by Prof. Carlo Vercesi. In discussing the tuberculous gravida, he reiterated what he had advanced in previous writings; namely, that pregnancy does not of itself contain any constant factors through which tuberculosis may be reactivated or aggravated. On the other hand, during the period of gestation all modern procedures of tuberculosis therapy can be advantageously employed. The obstetric care of the tuberculous gravida should be conservative; rarely is interruption of pregnancy indicated. The foregoing opinion is in accordance with that of the more authoritative obstetric clinicians both in Italy and abroad. With regard to the intra-uterine processes, studies have tended to minimize the importance of contagion from passage of filtrable virus. Although the development of the majority of babies of tuberculous mothers is below normal, the incidence of specific lesions is no greater than among other infants, provided they are immediately removed from contact with the tuberculous mother and other infected persons. Among the safeguards recommended for the tuberculous gravida the author urged first, hospitalization in an institution equipped to care for both women in childbirth and tuberculous patients. He urged the establishment of obstetric units in the larger sanatoriums and of special units for the care of tuberculous patients in other hospitals. Such combinations of facilities would make possible better collaboration between obstetrician and phthisiologist; this in turn would lead to greater availability of modern therapeutic methods, including collapse therapy. Prof. Rocco Jemma called the attention of the congress to the problem of tuberculosis in the nursing. The agencies for the treatment of tuberculosis in childhood should be welded into one strongly organized front. He mentioned the little recognized fact that servants and elderly relatives may be important carriers of infection. He attested the value of antituberculosis vaccination of children with Maragliano's serum or Petraggiani's tuberculin, supplemented in some cases by administration of BCG vaccine. Surgeon Major Professor de Paoli and Prof. Alberto Ciotola, director of the Colonial Hospital, Tripoli, reported on the extent of tuberculosis in Tripolitania. The diffusion of tuberculosis in North Africa corresponds closely to the urbanization of the population. It was the opinion of the discussers that present data on tuberculosis in the colonies are inadequate. It was accordingly proposed that the next national antituberculosis congress take up as a principal topic tuberculosis in the African colonies.

Plastic Surgery

Before the Società di chirurgia plastica ed estetica, Professor Manna discounted the idea that plastic surgery and cosmetic surgery are two independent disciplines, the first appertaining to general surgery and the second being employed essentially by the luxury class. Manna believes that since plastics attempts the reconstruction of mutilated and deformed tissues, cosmetic surgery ought to be considered a special branch of plastics, having as its purpose the restoration of the cosmetic function of damaged tissues. Its objectives are then both social and humanitarian. The application of cosmetic surgery is difficult; often from fifteen to twenty interventions have to be performed on the same patient to effect gradual adaptation of the tissues to the new circumstances of topography, circulation and consistency. As to the legal responsibility of the surgeon when a cosmetic operation falls short of its objective, the author maintains that this problem can be solved by application of the forensic principles already applied to general surgery.

Malaria Research

The Istituto Italiano di malariologia sent out to Ethiopia a medical research mission composed of Professors Lega and Raffaele, Dr. Canalis and a preparator. After four months in the field the commission reported that malaria is prevalent in Ethiopia, even on the lofty plateau regions 2,000 meters above sea level. The benign tertian type predominates; it occurs in epidemics which last the greater part of a year. In the lowlands malaria is endemic but less so than in the intermediate highlands. In the lowlands *Plasmodium vivax* is more common than *Plasmodium falciparum* as the causal agent. Quartan malaria is rare; cases in which the disease was caused by *Plasmodium ovale* were not observed. A new species of *Plasmodium falciparum* was frequently observed; it is characterized by definite peculiarities, both morphologic (larger trophozoites and shorter and wider gametocytes) and biologic (precocious exflagellation of the male gametocytes, scant pathogenicity in *Anopheles*). Lega and Raffaele have named this well differentiated species "aethiopica." Anophelism is extremely common even at altitudes above 2,000 meters; e. g., at Addis Abeba (2,640 meters above sea level). Thirteen species of *Anopheles* were observed, among them *Anopheles d'thali* and *Anopheles turkhudi*, previously believed restricted to the eastern Mediterranean region.

SWITZERLAND

(From Our Regular Correspondent)

May 6, 1938.

Case of Spontaneous Poliomyelitis in an Animal

The literature contains no report of spontaneous acute anterior poliomyelitis in an animal, and experimental inoculation has thus far succeeded only in apes. Therefore a case reported by Dr. E. Frauchiger at Langenthal, canton of Berne, is of the utmost importance. A heifer aged 1½ years, of healthy stock, was observed one morning to present a slight dragging of the left hind leg; by evening both hind legs were involved. On the following morning she was no longer able to stand; the fore legs were still mobile, whereas the hind legs had become completely limp and paralyzed. On the fourth day after manifestation of the initial symptoms all four extremities were completely paralyzed, the respiration was labored and the animal became so distended and restless that it had to be destroyed. No similar sickness had been observed previously among the live stock of this particular farm, nor had any cases of poliomyelitis been reported among the children of the neighborhood. As usual in cases of poliomyelitis, the necropsy revealed no specific macroscopic changes except hyperemia. Microscopic observations, on the contrary, were extremely characteristic, most notably in the lumbosacral portions of the spinal cord. The changes were identical with those that have been recognized in human subjects, and particularly with the changes described by Dr. Walthard of the Berne Institute of Pathology during the epidemic of 1937. In fact, it was Walthard who established the similarity by comparative microscopic study of the tissues. The course and symptoms of the heifer's illness corresponded with the clinical picture of reported fatal cases of acute ascending paralysis in man. It was recognized that more cases of the acute ascending form were observed during the poliomyelitis epidemic of 1937 than during previous epidemics. The analogy of the clinical picture, however, tells nothing with regard to a similarity or dissimilarity of the causative agent. Dr. Frauchiger says that this, the first case of spontaneous poliomyelitis in an animal to be recognized, permits the anticipation of other instances in the future. Possible cases should be reported while the animal is yet alive, so that experimental immunologic studies of the brain and of the spinal cord can be made. Transmission of the infection from animal to man can no longer be rejected. Research on the inoculation of cattle should now be renewed. Descriptions in the literature of minor epidemics of poliomye-

litis following ingestion of milk from a sick cow may be viewed in a new light. It may perhaps be useful to produce a heterologous immunizing serum from cattle, which would supplement Pettit's serum obtained from the horse. The virus of poliomyelitis may be modified in the direction of a virus fixa, in the pasteurian sense, and this principle as utilized in the study of rabies may be applied to poliomyelitis.

Epidemic of Poliomyelitis in a Regiment

The *Schweizerische medizinische Wochenschrift* recently published a report by Dr. Hans Stahel, regimental surgeon, on a singular epidemic of poliomyelitis. Within the short space of twelve days in July 1937, six of 930 soldiers came down with meningeal and myelitic symptoms, sixteen with purely meningeal manifestations and 108 with more or less marked catarrhal disturbances. Correct diagnosis was made almost immediately in the first case. The necessary procedures, including instructions to the men, were instituted. Virtually on the same day six other men reported sick. The clinical pictures were strikingly similar; there was obvious involvement of the nervous system. During the next few days the epidemic continued to spread, but now a surprising change in the character of the disorder became recognizable. The number of cases of neurologic involvement abruptly declined, whereas catarrh of the upper part of the respiratory tract and severer generalized symptoms came to the fore. Differential diagnosis between poliomyelitis and influenza became uncommonly difficult. Prominent in the clinical syndrome of poliomyelitis were malaise that had begun one or two days previously, persistent headache, sense of tension, stiffness of neck and back and localized myalgia. In most cases recovery took place without permanent sequels within a maximum of five weeks. The 108 cases of catarrhal disturbances (83 per cent of all observed cases) could be classified apparently as cases of abortive poliomyelitis. The opinion that the milder forms represented poliomyelitis rather than epidemic influenza was substantiated among other things by the fact that, although 5,000 other troops were stationed in the vicinity, no untoward rise in incidence of "army catarrh" took place. Moreover, patients with catarrhal poliomyelitis present certain peculiar characteristics: profuse perspiration, localized myalgias that did not shift from time to time (as happens in influenza) and a diphasic fever curve.

In contrast to other epidemiologic records, a morbidity of 14 per cent was reported; namely, a proportion 100 times greater than had ever been reported in the literature of poliomyelitis epidemics. Stahel believes that from his thoroughgoing epidemiologic studies of this highly homogeneous group a better insight into the true circumstances of epidemic poliomyelitis has been gained than would have been possible among the civilian population. Apparently one ought to regard involvement of the nervous system as a complication of the milder forms. Acute anterior poliomyelitis in all likelihood is not a distinct entity but a less common, more malignant form of the disease. From the standpoint of epidemiology the abortive forms of poliomyelitis must enlist greater interest. More energetic efforts should be made to quarantine all possible carriers of contagion; namely, all persons with catarrhal disturbances. Living quarters and other premises frequented by suspected carriers also should be placed under quarantine. In congested areas such measures cannot of course be very promising. During the epidemic in question, although the stricken regiment had certainly been in contact with the neighboring civil population, not a single authentic case of poliomyelitis could be determined among the latter.

The Nursing of Infants

A distinguished physician, Frau Dr. Imboden-Kaiscr, has published in the *Schweizerische medizinische Wochenschrift* some data on the feeding of nurslings, a problem with which she has been concerned for decades. In the city of St. Gall thirty years and more ago, the mortality for nurslings was quite high;

in 1904 it was still 18 per cent. In the year 1910, of 2,000 babies in the first year of life, 13 per cent of those who had not been suckled and 6 per cent of those who had been suckled died. Dr. Imboden at that time considered these facts proof that Swiss women were tending to lose the habit of breast feeding. She campaigned for the longest possible period of lactation, with the result that at St. Gall the number of breast-fed infants increased (from 53.4 per cent of all babies in 1904 to 89.5 per cent in 1932), whereas the mortality for nurslings declined (from 18.2 per cent in 1904 to 2.9 per cent in 1932). Other influences were present, but the foregoing figures offer certain proof that the increase in natural breast feeding was the principal factor in the decline of the mortality. In 1914 the federal government established lactation prizes for mothers who suckled a baby for ten weeks. This measure gave a powerful impetus nationally to the breast feeding of infants. From 1918 an almost uninterrupted rise in the Swiss curve of lactation took place; the percentage rose from 46 in that year to 60 in 1931. A slow regression has since occurred; the rate in 1936 was 56.2 per cent. Further comprehensive surveys have disclosed that well conducted infant welfare agencies can be of tremendous assistance in raising the rate. In the year 1936, for example, of about 600 nurslings supervised by Dr. Imboden's own service, 98 per cent were breast fed. The collaboration of the lying-in hospitals is important. No "artificial" feeding of infants should be permitted. Difficulties of lactation or a true deficiency of secretion should be combated with the breast pump as well as with donations of pumped breast milk. A propaganda campaign should be carried on among lying-in women. An important influence inimical to breast feeding is the lavish advertising of the purveyors of baby foods.

Appointment to the Chair of Surgery at Berne

A succession of distinguished incumbents has held the chair of surgery at Berne University. It was long occupied by Professor Kocher, who in 1909 was awarded the Nobel prize for his research on the thyroid. Prof. Fritz de Quervain, who succeeded Kocher on the latter's death in 1917, has now reached the age of 70 and relinquished his post in compliance with the retirement rules. De Quervain, himself a pupil of Kocher, has carried on the development of the famous school of surgery. In 1909 he was called to the chair of surgery at Basel, but he returned to Berne as ordinarius in 1918. With his retirement medicine loses the active services of one of the greatest of Swiss surgeons. De Quervain's contributions to clinical knowledge of the disorders of the thyroid are of the first importance; his book on goiter, for example, has appeared in several languages. His principal literary contribution was his "Clinical Surgical Diagnosis," which has been translated into five languages and is considered a classic of surgery. As a personality de Quervain is highly respected and revered. He is an excellent lecturer whose utterances always seem well considered and pertinent. Prof. Hermann Matti has been appointed to succeed de Quervain. Matti also is a pupil of Kocher and a surgeon of distinction. He is 58 years old and has been director of the surgical section of a Berne hospital. He has done important work on the surgery of gastric carcinoma, on the physiology and pathology of the thymus and in other fields, but he is best known through his two volume work on fractures and their treatment.

Prof. Otto Naegeli is Dead

Prof. Otto Naegeli, for many years ordinarius in internal medicine at Zurich, died March 11, aged 67. He had relinquished his professional chair on account of serious illness two years ago. His passing removes a great personality and a renowned internist. After he had served as ordinarius at Tübingen, Germany, he returned in 1908 to Zurich University, where he had won his first academic laurels, to become professor of internal medicine and director of the medical clinic. Naegeli was the son of a physician whose reputation was inter-

national. Of his many innovations only a few can be mentioned here: the discovery of Naegeli's blood syndrome of pernicious anemia, recognition of the significance of study of the bone marrow, emphasis on the dynamic theory of the hematic processes, evaluation of the leukemias, description of the "hiatus leucaemicus," recognition of the constitutional aspect of chlorosis and discovery of the genetic factor in hemolytic icterus. Shortly before his death Naegeli completed a treatise on "Differential Diagnosis in Internal Medicine," which reflects his mastery of the field. His classic textbook "Blood Diseases and Blood Diagnosis" has appeared in five editions. The esteem in which Naegeli was held, in Switzerland and abroad, found expression in many different ways.

AUSTRALIA

(From Our Regular Correspondent)

May 10, 1938.

National Health and Pensions Insurance for Australia

More than one in every four persons in Australia will be brought into compulsory insurance by the national health and pensions insurance bill, now passing its second reading in the federal parliament. More than half the population, including wives and children, is affected indirectly. It is proposed to make the legislation operative from January 1939. The scheme provides guaranteed benefits for sickness and disablement, together with old age pensions for insured persons and pensions and allowances for their widows and orphans. It is based on compulsory contributions and will apply to all persons over 14 years of age under contract of service to do manual work, whatever the rate of pay, and to those doing nonmanual work provided their salary is not more than £365 per year. The ordinary total weekly contribution at the inception of the scheme will be 3 s. per week for an employed man and 2 s. for an employed woman, the contributions being shared equally by employer and employee. Contributions will be collected through the postoffice by the sale of insurance stamps; they will be supplemented by a substantial annual grant from the commonwealth treasury. The benefits provided are medical attendance and treatment; weekly cash payments during sickness and disablement; superannuation pensions for insured persons, life pensions for their widows and pensions for their orphans up to the age of 15 years; allowance for the dependent children under 15 of persons receiving pensions or sickness or disablement benefits. The medical benefit will be a general practitioner service. A complete range of drugs and medicines and certain medical and surgical appliances will be supplied on the prescription of the medical practitioner. The British Medical Association has agreed to a capitation fee of 11 s. per head per year for each insured person. To meet the special difficulties of country doctors, additional payments from the national insurance fund will be paid for mileage involved. One of the difficulties in Australia is to provide adequate medical service for areas with a sparse population and long distances between patients. The ultimate scheme will bring in bush hospitals and "flying" doctors.

All insured persons may select their own doctor and pharmacist. A weakness of the scheme lies in the restriction of medical benefits to the insured person. Administration of the scheme will be in the hands of approved societies. Friendly societies, trade unions, mutual life assurance societies and other existing provident and welfare organizations may register as approved societies so long as they conform to the requirements laid down in the bill. No society will be permitted to reject an applicant for admission on the ground of age, and an insured person will be entitled to sickness benefits when certified to be incapable of work up to the age at which the old age pension is payable. Continuity of insurance and benefits during prolonged sickness is provided for. The present

plan covers only employed persons. Small farmers, storekeepers and business men are not covered by the provisions of the bill, and it is considered that a careful exploration should be made of the subject of voluntary insurance of the self-employed person, with a view to extending to him, if at all possible, the benefits of the scheme.

Library Service for Surgeons

This year the Council of the Royal Australasian College of Surgeons will receive the endowment provided by the late Gordon Craig, a foundation fellow of the college, who was always anxious that one of its main functions should be the teaching of surgery in its highest forms, teaching which concerns not only the education of medical men who wish to become competent surgeons but the continued education of fellows. The council feels that there can be no better method of educating its fellows than by making available to them, by a library service in their widely separated homes throughout Australia and New Zealand, all the resources of modern surgical literature. The present library, attached to the college building in Melbourne, is fully stocked with current literature and contains a number of recent surgical works; these, with other books, reprints and periodicals, which will be added, will form the basis for the Gordon Craig Memorial Library. The council will design the library service so that it will come within the reach of every fellow of the college. As each research into literature on a special subject is made at the instance of a fellow, it will be filed for the benefit of future investigators of the same subject. The fellows will be kept in touch with incoming literature in several ways. The Council hopes thus to build up eventually the best reference library of surgical literature in the Southern hemisphere.

Limitation of Pharmacies

A feature of pharmaceutical legislation which is new to both Britain and America is now in operation in New Zealand. Under the pharmacy reorganization plan, provision is made for the ultimate limitation of pharmacies on a basis of population. Licenses will be issued on a definite system, and, as part of the new order, a compulsory uniform scale of charges for dispensed medicines will be brought into operation. Under the plan, pharmacies will be redistributed as far as possible, so as to give the public more adequate service.

Marriages

ERNEST LANGSDORFF NOONE, Drexel Hill, Pa., to Miss Joyce Mary Toulmin of Broughton, England, May 12.

EDWIN F. BAKER, Ashton, Ill., to Miss Mildred Louise Short of Chicago, at Tipton, Iowa, April 14.

EDWARD O. BAUER, Middletown, Ohio, to Miss Juanita Rae DeArmand of Rockford, in March.

GUSTAVUS CLAGGET BIRD JR., to Miss Mildred Alice Spotts, both of Philadelphia, April 2.

JAMES C. KELTON, Lascassas, Tenn., to Mrs. Anna Davis King of Nashville, March 2.

JAMES DUDLEY WHITEHEAD to Miss Maria Weaver, both of Lake City, S. C., in April.

RAYMOND ROBINSON CALLAWAY to Miss Sue Clay, both of Birmingham, Ala., June 9.

ELIAS S. FREY to Miss Elizabeth Belle Ferguson, both of Louisville, Ky., April 7.

EDWARD B. PITTS, Fairfield, Ala., to Miss Katherine Shaefer at Opelika, in April.

IRVING GREENE to Miss Terese Claire Schwarz, both of New York, April 30.

EDWIN M. STEVENSON to Miss Mabel Dean, both of Memphis, Tenn., April 5.

PAUL S. HANSEN to Miss Elizabeth Coit, both of Chicago, March 26.

Deaths

Lewis Webb Crigler @ New York; Vanderbilt University School of Medicine, Nashville, Tenn., 1899; member of the American Academy of Ophthalmology and Oto-Laryngology; on the staffs of the New Rochelle (N. Y.) Hospital, Manhattan Eye, Ear and Throat Hospital, Horton Memorial Hospital, Middletown and the Peekskill (N. Y.) Hospital; aged 61; died, April 30, of heart disease.

Charles A. Bolich, Wadsworth, Ohio; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1897; member of the Ohio State Medical Association; veteran of the Spanish-American War; past president of the Medina County Medical Society; on the staff of the Wadsworth Municipal Hospital; aged 65; died, April 23, in the People's Hospital, Akron, of chronic myocarditis.

Lewis Thomas Rhoads, Lincoln, Ill.; Hahnemann Medical College and Hospital, Chicago, 1902; member of the Illinois State Medical Society; past president of the Logan County Medical Society; served during the World War; formerly member of the school board; on the staffs of the Evangelical Deaconess Hospital and St. Clara's Hospital; aged 63; died, April 13, of chronic myocarditis.

Frank Lauman Watkins @ Great Falls, Mont.; Ohio Medical University, Columbus, 1901; city and county health officer; formerly director of health education in the public schools of Tulsa, Okla.; at one time in charge of the Ohio Bureau of Vital Statistics and was affiliated with the Mississippi and Florida state boards of health; aged 58; died, April 8, in the Deaconess Hospital of lobar pneumonia.

John Mason Williams, Paris, Ky.; Louisville (Ky.) Medical College, 1893; member of the Kentucky State Medical Association; past president of the Bourbon County Medical Society; veteran of the Spanish-American War; formerly member of the city board of health; on the staff of the W. W. Massie Memorial Hospital; aged 67; died, March 12, in Lexington of coronary sclerosis.

Willard Curtis Proud @ St. Joseph, Mo.; University Medical College of Kansas City, 1896; Rush Medical College, Chicago, 1900; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; on the staff of the Missouri Methodist Hospital; aged 64; died, April 29, of carcinoma of the colon.

Daniel Robins Saunders, Franklin, Ind.; Southwestern Homeopathic Medical College and Hospital, Louisville, Ky., 1897; member of the Indiana State Medical Association; past president and secretary of the Johnson County Medical Society; city and county health officer; aged 85; died, April 5, in the Methodist Hospital, Indianapolis.

Vance Rawson @ Chicago; Hahnemann Medical College and Hospital, Chicago, 1901; formerly member of the school board in Danville, Ky.; served during the World War; at one time professor of internal medicine at his alma mater; on the staff of the Chicago Memorial Hospital; aged 61; died, April 19, of coronary thrombosis.

Theodore B. Templin, Gary, Ind.; Jefferson Medical College of Philadelphia, 1904; member of the Indiana State Medical Association; fellow of the American College of Surgeons; on the staffs of the Methodist Episcopal and St. Mary's Mercy hospitals; aged 58; died, April 26, of cerebral hemorrhage.

Harry Herbert Satchwell @ Newark, N. J.; University and Bellevue Hospital Medical College, New York, 1904; member and past president of the state board of medical examiners; on the staffs of the Presbyterian and St. Michael's hospitals; aged 54; died, April 6, of hypertension and nephrosclerosis.

William B. Treadwell, Lufkin, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1883; member of the State Medical Association of Texas; formerly on the staff of the Angelina County Hospital; aged 81; died, March 5, of arteriosclerotic heart disease.

Albert R. Wilson, Greensboro, N. C.; Jefferson Medical College of Philadelphia, 1882; member of the Medical Society of the State of North Carolina; past president of the Guilford County Medical Society; aged 78; died, April 22, of pernicious anemia and heart disease.

Orlando S. Ritch, Brooklyn; New York Homeopathic Medical College, 1878; on the staffs of the Cumberland, Prospect Heights and Infants' hospitals; fellow of the American College of Surgeons; member of the board of trustees at his alma mater; aged 70; died, April 12.

John Price Brown, Toronto, Ont., Canada; M.B., University of Toronto Faculty of Medicine, 1868, and M.D., in 1869;

L.R.C.P., Edinburgh, Scotland, 1883; member of the American Laryngological, Rhinological and Otolological Society; aged 93; died, April 3.

Charles Atwood Menefee ☉ Covington, Ky.; Kentucky School of Medicine, Louisville, 1898; president of the Campbell-Kenton Counties Medical Society; on the staff of St. Elizabeth's Hospital; aged 69; died suddenly, April 18, of cerebral hemorrhage and hypertensive cardiovascular disease.

Ralston Lattimore, Savannah, Ga.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1893; member of the Medical Association of Georgia; fellow of the American College of Physicians; aged 67; died, April 20, of arteriosclerosis and pneumonia.

Howard Patrick Doles, Mooringsport, La.; Tulane University of Louisiana Medical Department, New Orleans, 1912; served during the World War; aged 51; died, April 5, in the Highland Sanitarium, Shreveport, of general peritonitis and ruptured duodenal ulcer.

Charles Henry Field, Bradenton, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1891; member of the Florida Medical Association; formerly member of the state legislature; aged 68; died, April 18, of cerebral arteriosclerosis and coronary occlusion.

Henning F. B. Wiese ☉ Minneapolis; Kongelige Frederiks Universitet Medisinske Fakultet, Oslo, Norway, 1915; fellow of the American College of Surgeons; on the staffs of the Asbury and Fairview hospitals; aged 48; died, April 29, of carcinoma of the stomach.

William Lee Gannaway, Abingdon, Va.; University of the South Medical Department, Sewanee, Tenn., 1900; member of the Medical Society of Virginia; aged 61; died, April 17, in the George Ben Johnston Memorial Hospital of coronary occlusion.

Henry Wilson Ring, New Haven, Conn.; Medical School of Maine, Portland, 1887; member of the American Ophthalmological Society and American Otolological Society; aged 81; died, April 3, of myocarditis, nephritis and cerebral hemorrhage.

Jasper N. Walker, Bastian, Va.; University of Virginia Department of Medicine, Charlottesville, 1898; formerly member of the state legislature, and secretary of the board of health of Bland; aged 71; died, April 8, of cerebral hemorrhage.

John William Augustus Sanders, Lugoff, S. C.; Medical College of Virginia, Richmond, 1904; member of the South Carolina Medical Association; aged 61; died, April 22, in the Camden (S. C.) Hospital of acute coronary occlusion.

William Dacre Walker ☉ Andover, Mass.; Tufts College Medical School, Boston, 1905; for many years school physician, and member of the school committee; member of the New England Roentgen Ray Society; aged 60; died, April 12.

Sidney Le Grand Williams, Shreveport, La.; Tulane University of Louisiana Medical Department, New Orleans, 1899; at one time superintendent of the Charity Hospital; on the staff of the Highland Sanitarium; aged 61; died, April 9.

Brickhouse Wilson ☉ Independence, Mo.; Emory University School of Medicine, Atlanta, 1917; served during the World War; on the staff of the Independence Sanitarium and Hospital; aged 44; died, April 4, of coronary heart disease.

Wilton Allen Woodburn ☉ Pittsburgh; Jefferson Medical College of Philadelphia, 1902; on the staff of the Columbia Hospital, Wilkinsburg; aged 57; died, March 20, in the Columbia Hospital of carcinoma of the cecum.

Robert Jones Hunter, Greensburg, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1906; member of the Medical Society of the State of Pennsylvania; served during the World War; aged 55; died, March 30.

Walter Lawrence Blomgren ☉ Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1915; served during the World War; aged 44; died, April 20, in the Edgewater Hospital of staphylococcal septicemia.

Joseph A. Anderson, Antreville, S. C.; University of Maryland School of Medicine, Baltimore, 1886; member of the South Carolina Medical Association; aged 76; died, April 10, in the Anderson (S. C.) County Hospital.

Joseph Bishop Wolfe Jr., Coeburn, Va.; Louisville (Ky.) Medical College, 1891; member of the Medical Society of Virginia; aged 69; part owner of the Coeburn Hospital, where he died, April 7, of heart disease.

Harry Hall Wilson, Black Mountain, N. C.; New York University Medical College, New York, 1897; served during the World War; aged 64; died, April 4, in the Halifax District Hospital, Daytona Beach, Fla.

Lester Lawrence Anderson, Stoneville, N. C.; Medical College of Virginia, Richmond, 1927; member of the Medical Society of the State of North Carolina; aged 35; died, April 18, of coronary thrombosis.

Frank Raymond Sandt, Paterson, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1900; on the staff of the Paterson General Hospital; aged 61; died, April 5, of coronary occlusion.

David H. Montgomery, Union, S. C.; University of Tennessee Medical Department, Nashville, 1895; member of the South Carolina Medical Association; aged 69; died, April 22, of intestinal obstruction.

Benjamin Nadel, Brooklyn; Long Island College Hospital, Brooklyn, 1912; formerly on the staffs of the Beth Israel and Jewish Maternity hospitals, New York; aged 52; died, April 3, of coronary thrombosis.

William Hamilton Cantwell, Shawano, Wis.; Rush Medical College, Chicago, 1887; formerly postmaster and health commissioner; aged 79; died, April 30, of arteriosclerosis and coronary occlusion.

John Joseph Pietrzak, Detroit; Wayne University College of Medicine, Detroit, 1935; aged 30; died, April 6, at the Herman Kiefer Hospital of pulmonary tuberculosis and spontaneous pneumothorax.

William Alex. Wovschin, New York; University and Bellevue Hospital Medical College, New York, 1912; served during the World War; aged 55; died, April 15, in the Montefiore Hospital.

William C. Wimberly, Fort Gaines, Ga.; Kentucky School of Medicine, Louisville, 1889; member of the Medical Association of Georgia; aged 75; died, March 1, of bronchitis and hypertension.

William A. James, Chester, Ill.; St. Louis Medical College, 1881; member of the Illinois State Medical Society; aged 83; died, April 15, in St. Clement's Hospital, Red Bud, of intestinal obstruction.

Hugh Vincent Cunningham ☉ Johnstown, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1928; president of the staff of the Mercy Hospital; aged 36; died, March 27.

Clyde Crawford Hardison ☉ Iron City, Tenn.; University of Nashville Medical Department, 1910; served during the World War; aged 49; died, April 14, in the Coffee Memorial Hospital, Florence.

Harmon P. McKnight, Milford, Neb.; College of Physicians and Surgeons, Keokuk, Iowa, 1890; aged 80; died, April 29, in the Nebraska Soldiers and Sailors Home of arteriosclerosis.

William G. Blackwell, McCormick, S. C.; University of the South Medical Department, Sewanee, Tenn., 1898; aged 60; died, April 10, of a severed jugular vein in a hospital at Greenwood.

Joseph New Campbell, Stamford, Neb.; Lincoln Medical College of Cotner University, 1902; member of the Nebraska State Medical Association; aged 58; died, April 12, of pneumonia.

Joseph George Beaty ☉ Chilhowee, Mo.; Missouri Medical College, St. Louis, 1893; president of the Johnson County Medical Society; aged 71; died, March 24, of coronary thrombosis.

Jennie Newman Norris, Atlanta, Ga.; Woman's Medical College of Georgia and Training School for Nurses, Atlanta, 1891; aged 76; died, April 5, in the Grady Hospital of carcinoma.

Clarence Galleher Rea, Muncie, Ind.; Jefferson Medical College of Philadelphia, 1904; formerly city health officer; aged 58; died, April 9, at Rochester, Minn., of carcinoma of the colon.

Mary Fisher, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1889; member of the Medical Society of the State of Pennsylvania; aged 85; died, March 30.

Nathan H. Bickley, Stamford, Texas; Memphis (Tenn.) Hospital Medical College, 1892; member of the State Medical Association of Texas; health officer; aged 73; died, April 17.

Dallas McKeever Murphy ☉ Bethesda, Ohio; Starling Medical College, Columbus, 1898; past president of the Belmont County Medical Society; aged 64; was found dead, April 4.

Edward W. Greenlee, Kansas City, Kan.; College of Physicians and Surgeons, Medical Department Kansas City University, 1899; aged 74; died, April 17, of chronic osteomyelitis.

Lorin Anson Walker, Owego, N. Y.; University of the City of New York Medical Department, 1883; aged 79; died, March 24, of rheumatoid arthritis and chronic myocarditis.

Louis F. Donaghue, Mahanoy Plane, Pa.; Medico-Chirurgical College of Philadelphia, 1898; formerly county coroner; aged 62; died, March 20, of bronchopneumonia.

Clarence Eugene Brinckerhoff, Miami, Fla.; College of Physicians and Surgeons of Chicago, 1885; aged 78; died, April 19, of chronic myocarditis, arteriosclerosis and nephritis.

Luther P. Youmans, Swainsboro, Ga.; University of Georgia Medical Department, Augusta, 1892; aged 71; died, April 8, in a hospital at Savannah of influenza and myocarditis.

John David Nicodemus, Walkersville, Md.; Jefferson Medical College of Philadelphia, 1879; aged 83; died in April of cardiovascular renal disease and bronchopneumonia.

Samuel French, Plymouth, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1893; aged 68; died, March 13, in Kingston of cerebral hemorrhage.

Needham Kahn Moody, Memphis, Tenn.; University of Tennessee College of Medicine, Memphis, 1912; aged 49; died, April 18, in the Gartly-Ramsay Hospital of pneumonia.

Lewis Martin Tinker Ⓢ Frankfort, Ohio; Bellevue Hospital Medical College, New York, 1894; served during the World War; aged 68; died, March 9, of coronary thrombosis.

Cook Bar Young, Kansas City, Mo.; Canton University Medical Department, Canton, China, 1889; aged 70; died, March 13, of chronic myocarditis and hypertension.

Richard Baxter Rand, North Abington, Mass.; Dartmouth Medical School, Hanover, N. H., 1893; member of the Massachusetts Medical Society; aged 70; died, April 18.

John A. Rhodes, Crawfordville, Ga.; University of Georgia Medical Department, Augusta, 1887; member of the Medical Association of Georgia; aged 74; died, April 9.

George Washington Chabot Ⓢ Peebles, Ohio; Miami Medical College, Cincinnati, 1886; aged 75; died, April 19, of coronary thrombosis following prostatectomy.

Perry M. Lewis, Orlando, Fla.; Atlanta Medical College, 1915; member of the Florida Medical Association; aged 46; died, April 30, of a self-inflicted bullet wound.

Orion Kemper Thomson, Chicago; Miami Medical College, Cincinnati, 1889; aged 71; died, March 11, of chronic nephritis, prostatitis and arteriosclerosis.

James Elijah Neely, Kansas City, Mo.; Barnes Medical College, St. Louis, 1904; member of the Missouri State Medical Association; aged 64; died, April 11.

Harry J. C. Maus, Detroit; Michigan College of Medicine and Surgery, Detroit, 1904; aged 60; died, April 5, in the Lincoln Hospital of lobar pneumonia.

George Elmer Porter, Warehouse Point, Conn.; Dartmouth Medical School, Hanover, N. H., 1892; aged 70; died, April 11, of cerebral embolism and myocarditis.

José Ramon Alvarez, Havana, Cuba; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1885; aged 73; died, April 12.

James M. McPherson, Terral, Okla. (licensed in Oklahoma under the Act of 1908); member of the Oklahoma State Medical Association; aged 78; died, April 29.

Jesse Edgar Wright, Macon, Ga.; Vanderbilt University School of Medicine, Nashville, Tenn., 1899; aged 64; died, March 21, of cirrhosis of the liver.

Newell Cutler Bullard, Cambridge, Md.; University of Vermont College of Medicine, Burlington, 1898; aged 64; died, April 20, of cerebral hemorrhage.

William Henry Baxley Jr., Hephzibah, Ga.; University of Georgia Medical Department, Augusta, 1887; aged 74; died, April 22, of coronary thrombosis.

Eleanor Tomes, New York; Woman's Medical College of the New York Infirmary for Women and Children, New York, 1892; aged 88; died, March 3.

Jesse Belmont Rogers Ⓢ Michigan City, Ind.; Hahnemann Medical College and Hospital, Chicago, 1895; aged 72; died, April 22, of bronchial asthma.

Minnie Ridgeway Bishop, Chicago; Hahnemann Medical College and Hospital, Chicago, 1889; aged 77; died, April 13, of bronchitis and myocarditis.

Ralph Gordon Turner Ⓢ Walpole, Mass.; Rush Medical College, Chicago, 1933; aged 31, died, March 26, of pulmonary and intestinal tuberculosis.

John Roy Mackenzie, New Rockford, N. D.; Detroit College of Medicine, 1906; aged 57; died, April 10, in a hospital at St. Paul, of heart disease.

Margaret M. Kellogg, Petoskey, Mich.; Eclectic Medical Institute, Cincinnati, 1885; aged 84; died, April 6, of adenocarcinoma of the cervix.

Rutherford H. Paxton, Westcliffe, Colo.; College of Physicians and Surgeons, Baltimore, 1885; aged 74; died, April 27, of cerebral hemorrhage.

Ernest H. Spooner, St. Louis; St. Louis College of Physicians and Surgeons, 1894; aged 74; died, April 20, of arteriosclerotic heart disease.

Frederick Roscoe Ilsley Ⓢ Medford, Mass.; Harvard University Medical School, Boston, 1892; aged 67; died, April 28, of pulmonary edema.

George H. Chambers, Haverford, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1886; aged 73; died, March 21.

L. O. Blalock, Knoxville, Tenn.; Tennessee Medical College, Knoxville, 1906; aged 62; died, April 7, in the General Hospital of diabetes mellitus.

John L. Vickers, Wichita, Kan.; Louisville (Ky.) Medical College, 1895; aged 66; died, April 20, of coronary thrombosis and arteriosclerosis.

Thomas D. Fussell, Rhine, Ga.; Hospital Medical College, Atlanta, 1911; aged 56; died, April 14, of acute dilatation of the heart and influenza.

George Anderson Chain, Philadelphia; Medico-Chirurgical College of Philadelphia, 1899; aged 66; died, March 9, of coronary sclerosis.

George R. Robertson, Fair River, Miss. (licensed in Mississippi in 1882); Confederate veteran; aged 93; died, April 15, of arteriosclerosis.

Hyman D. Rubin, Brooklyn; Fordham University School of Medicine, New York, 1921; aged 41; died, April 26, at the Crown Heights Hospital.

James S. Evans, Houston, Miss.; University of Louisville (Ky.) Medical Department, 1881; aged 81; died in April, of arteriosclerosis.

John Desha Witt, Aurora, Ill.; Hahnemann Medical College and Hospital, Chicago, 1906; aged 63; died, March 2, of coronary occlusion.

Sylvester Edward Charlton, Galt, Ont., Canada; University of Toronto, (Ont.) Faculty of Medicine, 1900; aged 70; died, April 7.

John Henry Nauerth, Lakefield, Minn.; Rush Medical College, Chicago, 1891; aged 78; died, April 16, of carcinoma of the stomach.

William Lee Winn, Columbia, Mo.; Barnes Medical College, St. Louis, 1894; aged 68; died, March 13, of coronary thrombosis.

John W. Drinnen, Riverdale, Tenn.; Tennessee Medical College, Knoxville, 1899; aged 72; died, April 7, of coronary occlusion.

Clarence Eugene Pierce, O'Fallon, Ill.; Washington University School of Medicine, St. Louis, 1903; aged 66; died, April 9.

Edward James Megarr, Brooklyn; Long Island College Hospital, Brooklyn, 1893; aged 70; was found dead, April 16.

William Sherman Thomas, Kansas City, Mo.; Kansas City Medical College, 1892; aged 73; died, March 2, of pneumonia.

James T. Johnson Ⓢ Cumberland, Md.; Baltimore Medical College, 1892; aged 69; died, April 1, in the Allegheny Hospital.

James O. Rosamond, Easley, S. C.; University of Maryland School of Medicine, Baltimore, 1889; aged 73; died, April 23.

Carp Sanders Kinzer, Johnson City, Tenn.; Tennessee Medical College, Knoxville, 1900; aged 62; died, April 2, of embolus.

William Edgar Trego, Chagrin Falls, Ohio; Chicago Homeopathic Medical College, 1894; aged 71; died, March 27.

Orril L. Smith, Wichita, Kan.; Lincoln (Neb.) Medical College, 1904; aged 71; died, April 29, of gastric carcinoma.

Richard S. Dupont Ⓢ Detroit; Detroit College of Medicine, 1898; aged 67; died, April 9, of acute coronary thrombosis.

Canute L. Brudewold, Chicago; St. Louis Medical College, 1887; aged 72; died, April 10, of carcinoma of the stomach.

Correction.—The location mentioned in the obituary of Dr. George A. Brown in THE JOURNAL, May 28, page 1850, should have been Mount Ulla, N. C., instead of Banner Elk, N. C. Dr. James Arthur Brown is alive and practicing at Banner Elk.

Correspondence

GONORRHEAL ENDOCARDITIS

To the Editor:—In a letter to the Editor in *THE JOURNAL*, May 14, Dr. Merrill finds fault with the criteria that we consider essential in making the diagnosis of gonorrheal endocarditis. In doing so he has taken one sentence out of the first paragraph in the second column on page 549 in *THE JOURNAL* of February 19 and disregarded the preceding and subsequent sentences. In that paragraph it is stated that "the diagnosis of gonorrheal endocarditis depends on a heart lesion developing suddenly in the course of a systemic complication of gonorrhea" and that for an absolute diagnosis a positive blood culture in vivo or a recovery of the gonococcus from the heart valves is essential. Any one who reads this entire paragraph will find no reason for any disagreement.

With respect to the seven cases cited as proved cases I wish to refer to the original articles. My co-authors and I quoted enough from each one to indicate that the patient had a gonorrheal infection and the nature of the treatment as well as the outcome. We are not inclined to doubt the clinical ability of the respective authors quoted.

We did not think it necessary to insert the type of hemoglobinometer employed. The laboratories of Harper Hospital use the Salhi instrument. Dr. Merrill states that there was only a single observation of 63 per cent hemoglobin made. If he will read the last part of the case report it will be found that four months after discharge the hemoglobin of the patient was 81 per cent.

With respect to the statement that an anemia will produce a murmur, there is no argument. However, right under our eyes this patient acquired a murmur of increasing intensity in the aortic area, where previously a soft systolic murmur at the apex, not transmitted, was all that was audible.

This aortic murmur not only persisted during the entire course of the disease, but months after, when the hemoglobin had risen and all clinical signs of gonorrhea had vanished, the new murmur which developed during the course of the disease still persisted. If one had seen the cardiac picture of this woman when she was brought into the hospital, watched it change during the weeks of her illness, and then four months later examined her again, one would be forced to conclude that an active endocarditis had taken place and that definite valvular damage had been wrought.

HUGO A. FREUND, M.D., Detroit.

MASSIVE ATELECTASIS WITHOUT BRONCHIAL OBSTRUCTION

To the Editor:—Kaunitz (*THE JOURNAL*, May 21, p. 1770) has questioned the possibility that massive atelectasis may, in rare instances, occur without bronchial obstruction. At first we seriously questioned this possibility ourselves, realizing that the idea ran counter to existing experiments and conceptions. Our belief is that atelectasis, in the vast majority of cases, is due to pulmonary obstruction. But enough clinical evidence now exists to deny that atelectasis cannot possibly develop without obstruction.

We feel that nothing has been postulated in this connection (a position claimed as too plain to require proof). One of us became acquainted with the persons and facts concerned in three most dramatic, unfortunate and unexplainable results of anesthesia. At necropsy, obstruction was not found. If our report of these cases failed to state definitely that obstruction was not found, we apologize. The pathologists in two of the cases were most emphatic. In the third case, Dr. Guedel wrote us that obstruction was not seen in the parts of the bronchial tree that were examined.

Since our paper was offered, another case of death on the operating table of massive atelectasis is available in which obstruction was carefully sought and not found at necropsy. This will be published soon in *Anesthesia and Analgesia* together with a full discussion of the work of Lorrain Smith (referred to by Dr. Kaunitz) and many others concerning oxygen poisoning. With the publication of this case there will be in the literature seven cases of sudden death under or immediately following anesthesia from massive atelectasis, in which necropsy showed no trace of obstruction in the bronchial tree. This is not postulation: it is the proof itself.

Intrapleural and atmospheric pressure differences do not eliminate the possibility of atelectasis without obstruction. S. J. Meltzer (On the Respiratory Changes of the Intrathoracic Pressure Measured in the Mediastinum Posterior, *J. Physiol.* 13:218, 1892) long ago showed that negative pressure differences initiated by respiration, which are primarily dependent on the differential of atmospheric and intrapleural pressures, are not uniformly transmitted through the pleural cavity.

The total of vital capacity plus residual air in the average chest is about 5,000 cc. Thus when 300 or 400 cc. of gas is drawn into the lungs at each breath during quiet depressed respiration it is quite unlikely that this small amount disseminates to all parts of a space capable of expanding to a total of 5 liters, no matter what the pressure differential.

Air does not go into and out of the lungs as though they were simple balloons being inflated and deflated. The anatomic studies of Keith (Further Advances in Physiology, edited by Leonard Hill, London, Edward Arnold, 1909, p. 182) have shown that different parts of the lung expand at different times in a manner comparable to the opening of a Japanese fan. Some parts of the lung may not be ventilated at all for a considerable interval. In line with this conception Haldane and Priestly (Respiration, Yale University Press, 1935, p. 41) and again Schmidt (MacLeod's Physiology in Modern Medicine, St. Louis, C. V. Mosby Company, 1938, p. 485) call attention to the wide variations that exist, during shallow respiration, in the composition of the alveolar air from different parts of the same lung. If during these intervals, under anesthesia, only the rapidly absorbable gases are present a small area of atelectasis could readily be established and could continue to spread as a creeping process until terminated by demand for more lung absorption surface.

That such a process does go on during and following anesthesia can be inferred from the work of Muller, Overholt and Pendergrass. (Postoperative Pulmonary Hypoventilation, *Arch. Surg.* 19:1322 [Dec., part 2] 1929). These investigators showed a marked shrinking of the lung accompanied by an elevated diaphragm, vital capacity reduced to a third of normal and tidal volume reduced one half, in uncomplicated postoperative cases. Pressure differentials seem to be unable to prevent these results.

Dr. Kaunitz suggests that possibly either (a) bronchial spasm, (b) obstruction by the tongue or (c) breathing against a collapsed bag might explain the cases reported in our paper. The first suggestion has been argued for years but the weight of existing evidence is against it. (Coryllos, P. N.: Postoperative Pulmonary Complications and Bronchial Obstruction, *Surg., Gynec. & Obst.* 50:795 [May] 1930.) Certainly bronchial spasm clinically does not produce atelectasis; quite the opposite. The second and third suggestions, besides being inexcusable anesthesia practice, are unsuited to explain our reported cases. For instance, in one case collapse developed with an endotracheal tube in place, effectively eliminating the factor of tongue obstruction. Furthermore, breathing against inspiratory obstruction, such as would be produced by a collapsed breathing bag, produces pulmonary edema, not collapse (Moore, R. L., and Binger, C. A. L.: The Response to Respiratory Resistance, *J. Exper. Med.* 45:1065 [June] 1927).

Finally, the fact that animals are able to exist for varying periods in oxygen rich atmospheres was brought out as an objection. This opens the extensive subject of oxygen poisoning. But it should have been added how they live: in preparation of death. High tension oxygen atmospheres were demonstrated as being universally fatal for warm blooded animals by the work of Binger, Faulkner and Moore (Binger, C. A. L.; Faulkner, J. M., and Moore, R. L.: Oxygen Poisoning in Mammals, *J. Exper. Med.* 45:849 [May] 1927. Faulkner, J. M., and Binger, C. A. L.: Oxygen Poisoning in Cold Blooded Animals, *ibid.* 45:865 [May] 1927).

We are familiar with the work of Fine, Hermanson and Frehling (Further Clinical Experiences with 95 Per Cent Oxygen for the Absorption of Air from the Body Tissues, *Ann. Surg.* 107:1 [Jan.] 1938) with high oxygen concentration in man. The conditions under which they worked are not comparable to those used with experimental animals. Frequent interruptions for nursing care and treatment were necessary.

Binger and his co-workers quote one instance from the German literature of changes produced in a dog's lungs within fifteen minutes by inhalation of pure oxygen, although this is unusual. In oxygen poisoning the lungs at necropsy are found "collapsed" (their word), airless and sink in fixing fluid. The blood vessels are engorged. This much of the picture simulates massive atelectasis. But the completed picture is quite different, possibly for this reason. The high pressure head of oxygen allows life to continue much longer than such extensive pulmonary changes would otherwise permit. For instance, Binger took animals out of an oxygen chamber after this condition was well established and produced immediate death. This prolongation of life allows time for further changes in the appearance of the lung. The alveoli refill with red cells and transudate from the engorged lung vessels. The epithelial cells slough, possibly as a result of the existing lung damage, from inadequate exposure to oxygen. The animals all die of severe anoxemia. At least in presenting this guess, no other theory has to be disproved, for no explanation has been advanced to account for the unique pulmonary basis of this mysterious phenomenon, which has puzzled thoughtful men since the time of Paul Bert.

These rare cases of massive atelectasis without obstruction are relatively unimportant. Of greater significance is the possibility that by the use of inert gases in anesthesia a further reduction in the incidence of postoperative pulmonary complications, developing from the widely accepted sequence of bronchial obstruction and atelectasis, may eventuate.

O. R. JONES, M.D.

G. EDGAR BURFORD, M.D.

New York.

"CHRONIC SUBDURAL HEMATOMA WITH ACUTE PSYCHOTIC MANIFESTATIONS"

To the Editor:—With regard to the article by Dr. D. M. Olkon on chronic subdural hematoma with acute psychotic manifestations (*THE JOURNAL*, May 14, p. 1664) it appears to me that the patient mentioned had an additional diagnosis, that of bromide intoxication, which if true could easily have been confirmed by a blood bromide determination. In the first place there is a history of bromide intake: "He took 'bromo-seltzer' three or four times a day." I infer that this intake continued over a period of about one year since the "bromo-seltzer" was taken for headaches, which began about a year before the patient came under Dr. Olkon's care and "continued." A patient in our series of twenty-one cases of bromide intoxication (Burns, G. C., and Henderson, J. L.: Bromide Intoxication, *California & West. Med.* 46:392 [June] 1937) had a similar history of having taken "bromo-seltzer" in excessive quantities, as a result of which he contracted a bromide intoxication. His symptoms were such that the diagnosis was thought to be dementia paralytica and it was only after the laboratory

returned a negative report on the spinal fluid that a test of the bromide content of the blood was taken. This showed 250 mg. per hundred cubic centimeters. Another patient in our series showed a tendency to stagger, stumble and fall five months prior to admission, apparently the result of bromide intoxication, since she had been taking bromides for two years prior to her admission. This is comparable to Dr. Olkon's patient, who "had a tendency to stumble and fall" about six months before the onset of his acute symptoms.

Dr. Olkon's physical, neurologic and psychiatric observations are all typical of bromide intoxication. The psychiatric picture in particular is that of an acute organic reaction, a toxic delirium with confusion, disorientation and a tendency to misidentify even his nearest relatives. In particular the hallucinations were vivid and terrifying and he tended to react to them acutely and promptly. This mental picture is very different from the usual dull retarded stuporous, even comatose, symptoms typical of subdural hematoma, which of course Dr. Olkon recognized and is his reason for reporting the case: "Careful search of the literature did not reveal any case of chronic subdural hematoma in which mental features were predominating and the organic manifestations mainly absent; for these reasons this case is reported." The average hospital diet contains enough chlorides to replace bromides to the point at which such symptoms would disappear in two to three weeks. In any event I feel that bromide intoxication should be ruled out before these symptoms are attributed to chronic subdural hematoma.

J. L. HENDERSON, M.D., Compton, Calif.

Resident Physician, Compton Sanitarium.

ACTION OF HYPOGLYCEMIA ON NERVOUS SYSTEM

To the Editor:—I read with great interest in *THE JOURNAL*, April 30, some observations on the action of hypoglycemia on the central nervous system by Dr. Ernst Gellhorn.

May I venture to offer a somewhat different explanation of the benefits of hypoglycemia in schizophrenic patients. It is agreed that there is a reduction in the oxidation rate and sugar consumption in the central nervous system, as proved by Himwich, but I do not believe that there is much evidence to sustain the opinion that the sympathetic centers are stimulated by this regimen, except as a result of the dominance of the vagus in the hypoglycemic state and the subsequent calling into play of the principle of homeostasis. The sympathetic discharge probably comes at the end of the treatment, as Dr. Gellhorn himself has noted, but I believe the benefits derived are rather due to the preliminary vagotonic state.

May I refer to some observations of my own in a discussion on this whole subject at a meeting of the Section of Neurology and Psychiatry of the New York Academy of Medicine, held on Oct. 12, 1937, and reported in the *Archives of Neurology and Psychiatry* (39:853 [April] 1938). In this discussion I said:

The effect of insulin seems to be, as Dr. Himwich has demonstrated, a reduction in the entire metabolism of the brain. There are indications during this phase that the vagus nerve begins to dominate the scene. One notes, for example, vomiting, sweating and bradycardia—evidences of increased vagal tone. Dr. Sakel has spoken of vagotropic effects and the use of insulin to paralyze adrenal activity. I wish to expand on this vague concept and to stress the neurophysiologic mechanisms involved. The vagus nerve is the regulator of anabolism, the great conserving force in human economy. It dominates in hibernation states, when the vital forces must be husbanded—witness the bradycardia, low blood sugar and lowered metabolism in these states. It counteracts the effects of sympathetic domination, in which all the fighting resources of the body are mobilized for defense, as has been pointed out by Cannon.

Insulin treatment, therefore, is a form of protective therapy. It seems that the effect of insulin is to reduce the tempo of the whole vital process in a person who is battling with all sorts of complexes, panics and threats to the ego, with consequent mobilization of all the resources of

defense, in a struggle which results not in success but in the patient's becoming ill. The effect of insulin, then, is to spare these fruitless expenditures of energy and protect the patient against this fitful, anarchic discharge of energy.

This method of therapy is also protective on the psychic side. It is a form of necrosis therapy, with blotting out of the abnormal activity of the mind consequent on the states of panic and threats to the ego already spoken of. These are held in abeyance because, so far as is known, in the well developed narcissus no psychic processes go on and the person in this state is spared the necessity of thinking about his problems. This may explain the favorable effects of sodium amylal narcosis reported from so many sources. As a result of blotting out the abnormal activity of the mind, the organism recuperates, and, owing to the inherent factors of safety in the human organism stressed by Meltzer and others, the patient returns to the problems of living with a fresh approach and begins to function anew.

This subject is vital and represents a totally new approach to the human mind. The brain is now being considered as an organic unit in the human body and subject to the same biochemical and neurophysiologic mechanisms which obtain in other parts of the human economy.

E. D. FRIEDMAN, M.D., New York.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ERGOTAMINE TARTRATE IN MIGRAINE

To the Editor:—A patient with severe migraine headaches has been studied from an allergic point of view and all substances to which she shows any response of an allergic type have been eliminated from her diet. Typical attacks are preceded by a twenty-four hour period of exhilaration, one-sided headaches coming on at the end of this time, usually on the left side. There is a visual aura. She is, so far as I can determine, in perfect health otherwise. Her past history is negative; her menstrual history is normal. She has one child, aged 5. I have been using ergotamine tartrate in 1 cc. doses. One dose always is sufficient to relieve her headache. A 0.5 cc. dose, however, does her no good. For the first month or two during which I treated her she had headaches at intervals of from ten days to two weeks. For the past two months, however, her headaches have become increasingly frequent and in the last ten days she has had four attacks, each responding within two or three hours to the injection of ergotamine tartrate. I am well aware of the danger in long continued use of ergot preparations but I am not able to discover the amount of ergotamine tartrate that produces these effects. Is there any other means of bringing prompt relief from these headaches? Should I discontinue the use of the ergot preparations and try to rely on the usual sedatives? About how long a time is required for toxic properties of the preparation to produce circulatory or nervous symptoms? Is it possible to have migraine headaches at as short intervals as this patient apparently has them?

M.D., Texas.

ANSWER:—There seems to be no reasonable doubt about the diagnosis. The patient has the usual visual aura followed by hemicrania. She has, moreover, been relieved in the past by ergotamine tartrate. The fact that the headaches are increasing in number, with a short interval between them, suggests other factors which are not entirely compatible with the diagnosis. It is unusual for patients to increase the frequency of their attacks. Because of this the patient should be thoroughly rechecked, special attention being paid to a possible endocrine imbalance.

Specifically it may be stated that no other drug gives such prompt relief in migraine as ergotamine tartrate. If toxic manifestations from ergot are beginning, the patient will first note a persistent numbness and tingling of the extremities, possibly with some evidence of peripheral vasospasm. It is considered inadvisable to give ergotamine tartrate, either subcutaneously or intramuscularly, in more than 1 cc. doses, administered in twenty-four hours, nor more than two such injections in any one week. In some patients this dosage may cause signs of ergot poisoning and a good general rule would be to use not more than 1 cc. per week. Some relief may be obtained by the use of a readily assimilable calcium compound, such as calcium gluconate, 4 Gm., two or three times a day. Further discussion of this subject can be found in the article by von Storeh to be published in *THE JOURNAL*.

POSSIBLE TYPHOID FEVER

To the Editor:—A boy, aged 14, one of three children with typhoid, had a typical typhoid course for approximately seven weeks. Fever ranged from 99.5 F. in the morning to 103.5 in the afternoon. He has completely recovered. The Widal test and culture were both positive. However, a sister, aged 10, became ill about three days after him with fever and mild headache. Her temperature varied from 99 to 100 F. For the past forty-five days her fever has appeared from one to four hours only during the afternoon. She has had fever for ninety days to date. Another sister, aged 7, became ill two or three weeks after the brother and her temperature has taken about the same course as her sister's, around 99 to 99.5 F., for about seventy days. No blood test or culture was made on the girls. The sisters have never been very sick and except for a little rise in temperature are normal in every respect. All other examinations were negative. Would you consider the duration natural and continue to keep them in bed, with proper food and nursing? What are the possibilities of some hidden complication and where would you suggest looking for it? Is there any drug that might hasten recovery?

M.D., Texas.

ANSWER:—The diagnosis of typhoid in the case of the girls mentioned in this question was entirely warranted by the circumstances but the clinical course has not been that of typhoid. Typhoid in children may show aberration from the adult form but as a general rule the course of the disease is shorter than in the adult. "Ambulatory typhoid," or typhoid with low fever, does occur but it is rather rare and it would be unusual to have two such cases at one time. This situation requires the application of accurate diagnostic measures. If the girls have typhoid it may be demonstrated by the serologic reaction and the isolation of typhoid bacilli from the stools. It seems more than likely that the cases will prove to be something other than typhoid. If this is true it will be necessary to work through the list of causes of long continued fever. Only by this procedure can one arrive at a correct diagnosis. Among the more common causes for this clinical picture are mediastinal adenitis, infectious mononucleosis, and rheumatic fever. Tuberculosis must be ruled out, although this disease in children is likely to take a much more stormy course than that described.

If the cases prove to be typhoid, the only treatment is continued time and patience. It is difficult to see what complication of typhoid could be present without becoming quite obvious after such a period.

STERILIZATION OF RUBBER BOOTS AND SHOES

To the Editor:—What is the simplest and most effective method of sterilizing rubber boots, leather shoes and clogs, suitable for an industrial organization? Steam sterilization tends to devitalize rubber and hardens leather. Gas would be preferable to a liquid chemical.

GEORGE M. BLANK, M.D., Lorain, Ohio.

ANSWER:—The majority of agents that might provide disinfection are prone to damage the articles mentioned. Formaldehyde makes leather brittle, sulfur attacks metal parts, various possible hydrocarbons may dissolve or attack rubber. Glues used in connection with footwear may be dissolved by many liquids. Penetration is slight by fumigation; sunlight or artificial ultraviolet rays may not be introduced readily in most instances. In the case of wooden clogs there can be no objection, except in connection with fading, to submersion in a chlorine liberating solution or appropriate solutions of commercial agents, such as saponated solution of cresol. In the case of rubber boots and leather boots or shoes the use of dusting powders is likely to yield unsatisfactory results or to cause dermatitis to the subsequent wearer. Many organisms are short lived and will die if the articles are not worn for a few days. Exposures to intense sunlight will be of some value, but obviously penetration is not possible in many instances. If the matter is limited to the occasional disinfection of a single pair of shoes, thus not warranting elaborate equipment, it is possible that the best results may be obtained by a generous sponging with a phenolic solution or equivalent coal tar bodies. This will not yield perfect results.

Special ultraviolet equipment may be introduced into the individual shoe or boot as may be required. This will represent an expensive, time consuming and somewhat practical procedure. Hydrocyanic acid fumigation, carried out in gas tight cabinets under safe conditions, will be effective in killing off animal parasites but is of little value as a germicide. The prospective results from this procedure do not warrant the required outlay. If any chemical agent is used, extensive airing of the boots and shoes is a prerequisite to rewearing. In general this problem tends to resolve itself into the practice of procuring conditions with reference to footwear that will make sterilization or disinfection unnecessary.

DEXTROCARDIA WITH SITUS INVERSUS

To the Editor:—A boy, aged 12 years, on careful x-ray examination is shown to have dextrocardia. In addition, his stomach, liver, kidneys and cecum are reversed. Will you please advise me regarding the frequency of this condition?

L. C. CHADSEY, M.D., Brockville, Ont.

ANSWER.—Congenital dextrocardia with or without the situs inversus is a rare condition. Dextrocardia without transposition of the abdominal viscera is almost always associated with other structural defects in the heart, but the heart is likely to be normal in instances such as that noted of dextrocardia with the situs inversus. In Dr. Maude Abbott's statistics of congenital heart disease among 1,000 cases analyzed by her, fifteen were of dextrocardia with situs inversus, four of which complicated other defects.

There are, so far as is known, no complete statistics of this type of dextrocardia in the population at large but there are a few suggestive studies, one of which was the analysis of Boston School Children some years ago. Among 27,900 school children from four districts in Boston (West End, North End, Charlestown and East Boston) there were three cases (0.01 per cent) of congenital dextrocardia with the situs inversus. Probably this is not far from the true incidence of congenital dextrocardia with the situs inversus in the population at large.

INSULIN AND HEXYLRESORCINOL ORALLY

To the Editor:—What is the present status of insulin by mouth with hexylresorcinol?

GUY E. FINKLE, M.D., McPherson, Kan.

ANSWER.—The present status of the administration of insulin by mouth with hexylresorcinol is purely experimental. Daggs, Murlin and Murlin (*Am. J. Physiol.* 120:744 [Dec.] 1937) reported that they obtained a significant fall in the blood sugar in only about 50 per cent of dogs so treated. A fall of 20 mg. or more per hundred cubic centimeters was considered significant. But these animals were made to fast for sixteen hours prior to the administration of insulin and were given from 100 to 250 units of insulin at a dose. Furthermore, even when a fall in blood sugar did occur, it was not maintained for more than two or three hours.

These results are interesting and hopeful but, even if confirmed by others, the practicability of their application to the treatment of diabetes mellitus is doubtful.

HYPERTENSION AND DECOMPENSATION

To the Editor:—A white woman, aged 52, who has been known to have hypertension for five years, suddenly had two successive attacks of transitory blindness in the right eye. Examination showed a normal disk, sclerotic arteries with crossing compression of the veins, and no exudate or hemorrhage, but a dilated pupil responding poorly to light in the right eye. The blood pressure is 180 systolic, 120 diastolic. Several days later, general weakness and drowsiness prompted a determination of the non-protein nitrogen, which was found elevated to 60 mg. per hundred cubic centimeters. Fluids by mouth were then forced and hot pads applied to the back for a week, when a second test showed 32 mg. of nonprotein nitrogen per hundred cubic centimeters. At this time the patient felt much stronger and no longer drowsy. Repeated urine examinations showed no dextrose, albumin, casts or red cells and a specific gravity of 1.016. The output of urine on forced fluids was from 2 to 2.5 liters. Until the attack of blindness the chief complaint was inability to walk more than a block without fatigue and dyspnea. There appears to be a mild ascites but no ankle edema, sacral edema, cyanosis or orthopnea. In a period of one year there has been a gain of 14 pounds (6.4 Kg.) without any increase in appetite. The pulse rate is 80. The following statements appear likely: The patient has latent edema, and this and the mild ascites are due to beginning congestive heart failure secondary to the essential hypertension. The patient has considerable kidney damage, presumably due to prolonged hypertension, and accumulation of nonprotein nitrogen is prevented only by a free, large intake of fluid. (Incidentally, on bed rest and sodium nitrite, the patient's blood pressure came down from 180/120 to 146/82 and oscillates between these levels.) What methods of combating the congestive failure (which I expect to increase progressively) are available which do not require a restriction of fluid intake? Digitalis seems contraindicated with a pulse rate of 80, and mercurial diuretics also. Is it likely that a vascular crisis causing spasm of the retinal vessels might similarly affect the kidney and cause temporary loss of function, which is responsible for the azotemia observed in this case? What further suggestions for treatment can you make; e. g., pancreatic hormones?

M.D., New York.

ANSWER.—The conclusions as stated are logical and warranted from the data available. The fall in arterial tension from 180/120 to 146/82 with bed rest and sodium nitrite reveals that the arterioles have not yet become extensively sclerotic. Under such circumstances one may hope for better therapeutic results than when the arterioles are rigid and the diastolic tension is fixed.

The acute transient blindness was probably due to arteriolar or arteriolar spasm of the retinal vessels. The drop in tension with vasodilator medication reveals that the great majority of the vessels are relaxable and therefore also prone to spasm. It is possible, but not probable, that similar renal arterial spasm caused the hyperazotemia. It is more logical to consider that the patient's renal functional efficiency had been impaired for some time with a gradually rising azotemia, discovered at the peak. The primary and fundamental failure of the kidneys in nephritis is depression of the renal ability to concentrate the urine. The response to forced fluids in this instance is illustrative. Under such circumstances as these, there is no alternative but to give the patient's kidneys sufficient water to permit adequate daily removal of the metabolic debris. Renal function studies are in order. At least the concentration test and the urea clearance test should be carried out and repeated at intervals of several months. The technic and interpretations were given in *Queries and Minor Notes* in *THE JOURNAL*, Feb. 8, 1936, page 484.

Despite the additional burden it may place on the heart, a liberal fluid intake is absolutely essential. The burden this engenders can be minimized by spreading the intake out; the patient should consume fluids in small quantities but at frequent intervals. Adequate therapy must invariably take the causation into consideration. Are there any other sources of cardiac injury in addition to the hypertensive arterial disease? Obesity might be one. Coincident anemia would greatly add to the cardiac problem as well as to the renal one. If the hemoglobin content of the blood should be found below 85 per cent by accurate determination, prompt treatment is indicated. The xanthine derivatives, particularly aminophylline or the more soluble and less irritating glucophyllin (a German product containing 10 per cent dextrose and 2 per cent theophylline), may, by aiding the coronary circulation, do much to support the myocardium. An adequate supply of available dextrose is important; cardiac efficiency is often much improved thereby. The most important aid, however, which may be given this heart is in reducing the burden of required work. This means reduction of the diastolic tension for a long period. The vascular sedatives, such as sodium nitrite, bismuth subnitrate (0.6 Gm., or 10 grains, thrice daily) or small doses (0.03 Gm., or one-half grain) of erythroltetranitrate should prove of value. If apprehension or high nervous tension are considered factors elevating the arterial tension of the patient, moderate doses of bromides (approximately 0.6 Gm., or 10 grains, thrice daily) may be of aid. The thiocyanates, although effective arteriolar sedatives, are not safe, particularly in this instance with definite renal impairment. The larger fluid intake should also contribute toward reduction of the hypertension. The various tissue extracts, among which insulin free pancreatic extract is perhaps the best known, have vasodilator properties similar to adenosine. But the fact that they must be administered hypodermically at frequent intervals over many months makes this form of vascular sedation unpractical.

If the patient is overweight, gradual reduction is highly desirable. Radical restriction of the protein intake is contraindicated; it would aggravate any tendency to anemia and edema and be of no benefit in controlling the hyperazotemia. All spices and condiments are best deleted. Salt in small amounts, such as used in ordinary cookery, is advisable. Coffee and tea are permissible except in the late afternoon and evening. The morning stimulation is desirable and caffeine is both a cardiac and a renal stimulant.

LIVER AND IRON IN SECONDARY ANEMIA

To the Editor:—What is the current opinion of authorities doing blood work relative to the value of liver extract given orally in the treatment of secondary anemias? Also I should like to know whether or not such commercial preparations as "Lextron" of the Eli Lilly Company are thought to contain sufficient available iron in the doses recommended for the treatment of secondary anemias.

ROBERT G. PRICE, M.D., Bloomington, Ill.

ANSWER.—In the majority of hypochromic (secondary) anemias it is now generally agreed that there is no advantage in giving liver preparations provided adequate doses of iron salts are used. Adequate doses of iron compounds are: iron ammonium citrate 6 Gm. (90 grains) daily; ferrous sulfate 0.6 Gm. (9 grains) daily; ferrous carbonate 4 Gm. (60 grains) daily. If these doses are used there is no added therapeutic benefit from the use of liver. However, in a few cases of hypochromic anemia complicated by massive hemorrhage, liver extract containing the so-called Whipple secondary anemia fraction may be administered concurrently. Lextron is a proprietary name for a complex product stated to contain in each capsule "liver-stomach" concentrate 0.455 Gm. (7 grains), iron

and ammonium citrate green 0.2 Gm. (3 grains), vitamin B₁ 20 international units, and vitamin B₂ 20 Sherman units. In recommended doses this is equal to from 1.75 to 2.3 Gm. (27 to 36 grains) of iron ammonium citrate green a day. This is obviously not an adequate dose of iron for best results. It is best to give iron first and supplement it with the Whipple fraction of liver only in the few cases of hypochromic anemia if iron compounds alone fail to bring the blood to normal in a reasonable time. Lextron does not stand accepted by the Council on Pharmacy and Chemistry.

POLYPOSIS OR CANCER OF COLON IN CHILD

To the Editor:—A white boy, aged 5, has had recurrent attacks of pain in the abdomen for the past eighteen months. At these times gross pus and blood are seen in the stool. Microscopic examination of the stool shows no specific causative organism. The blood and urine are normal. X-ray examination of the gastro-intestinal tract gives normal results excepting for roughness in the descending colon. This condition was diagnosed by the x-ray department as probable colitis. The patient has passed small globular chunks of well preserved tissue by rectum which microscopically have the appearance of polypoid tissue. From this I have made a diagnosis of multiple polyposis of the colon. Please discuss treatment in a case of this type together with references to the literature.

M.D., District of Columbia.

ANSWER.—Simple polyposis of the colon of the so-called congenital type is said to have its highest incidence in children and young adults. The entire colon is frequently affected, but the process may be limited to the rectum and sigmoid. These portions of the colon are almost always involved and hence a proctoscopic examination should give further diagnostic information. Chronic amebic colitis has apparently been excluded by the failure to find *Endamoeba histolytica* in the stools. So-called nonspecific ulcerative colitis can probably be excluded by the proctoscopic examination, for this disease also almost invariably involves the rectum and is not difficult to differentiate from polyposis except for the cases of chronic and long-standing ulcerative colitis in which secondary hyperplasia and polyposis develop—a situation obviously not obtaining in the case described.

The passage of "small globular chunks of well preserved tissue by rectum which microscopically have the appearance of polypoid tissue" is almost never seen in ulcerative colitis. This statement applies equally to benign polyposis, for in this condition the polyps are firmly attached to the bowel, they are not necrotic, and they rarely if ever slough. The presence of polypoid tissue in the stool suggests the diagnosis of carcinoma. This possibility fits well with the known tendency of benign polyps to undergo malignant transformation—a tendency estimated at from 40 to 50 per cent. Further careful microscopic study of the tissue passed by rectum would probably reveal definite evidence of carcinoma.

If this should be the case, radical surgery offers the only possible hope, but, of course, the prospects for permanent cure are not bright. There are good discussions of the subject and references to the literature in such standard textbooks as "The Colon, Rectum and Anus," by Rankin, Bagen and Buie, and "Proctology," by Yeomans. Ralph M. Larsen described an infectious polypoid colitis (*Arch. Int. Med.* 51:236 [Feb.] 1933) but the case reported bears little resemblance to the one cited.

BLANKETS AND TEMPERATURE FOR INFANTS

To the Editor:—I have been telling mothers who ask how warmly a child should be covered that a thermometer placed between the blanket and the baby should register within a few degrees of 80 F. Is there a range of temperature in that area (i. e., between the blanket and the baby's body) which is considered safest?

M.D., New York.

ANSWER.—No definite answer can be given to the question as to the range of temperature between the blanket and the baby's body. The size of the baby, its age, its subcutaneous tissue and its heat regulating mechanism would all come under consideration in the answer to this question. There must be great individual variations in these various factors in different babies. This becomes at once evident in the care of a large station for premature infants, where it has been noted that babies of equal age and weight will require different incubator temperatures to maintain their normal body temperatures. The incubators must be adjusted in a range from 78 to 90 F. for babies of different age weight.

Another factor would be the texture and quality of the sleeping garment worn by the infant. If the baby was in a heavy woolen sleeping suit, a given temperature between the blankets might be too warm. On the other hand, this temperature might be too cool for the baby if he was dressed in only a

light garment. The temperature of the sleeping room and the thickness and type of mattress would also be factors that would influence the warmth of the infant.

It must be admitted that the modern mother desires and is flattered by specific instructions. She would rather be told the exact temperature to have the baby's bath than to test the warmth of the water with her elbow as the old fashioned mother did. However, owing to the many variables mentioned, it would seem almost impossible to advise her to insert the thermometer between the blankets and advise her the exact degree of Fahrenheit which would be optimal for the warmth of the baby.

It would seem better to advise the mother in the old fashioned common sense way to feel the baby's hands or feet and note whether these are cold or warm or whether the baby is restless or sweating.

VESICOVAGINAL FISTULA

To the Editor:—Is there any satisfactory contrivance to be worn by a woman with a vesicovaginal fistula? This is a recurrent malignant condition which originated in the cervix and was irradiated apparently successfully three and one-half years ago. The woman is in good general condition and probably would have several months to live and go about if she could keep dry.

M.D., Virginia.

ANSWER.—There is no satisfactory contrivance to be worn by a woman with a vesicovaginal fistula. The most satisfactory substance for local application is kaolin ointment prepared as follows: A puddle of liquid petrolatum is poured on a glass slab. Kaolin powder is gradually added and worked into the oil with a spatula. Sufficient kaolin is used to make a mixture the consistency of very thick cream.

ARSPHENAMINES AND BISMUTH BY INUNCTION OR SUPPOSITORY

To the Editor:—Has any effort been made to administer arspphenamine, neoarsphenamine or bismuth as an inunction in a suitable ointment base, or rectally in suppository form?

M.D., Louisiana.

ANSWER.—Arsphenamine, neoarsphenamine and bismuth compounds have been administered by inunction in the treatment of syphilis but without success. According to the latest pharmacologic literature on the subject of absorption through the skin (Macht, D. I.: The Absorption of Drugs and Poisons Through the Skin and Mucous Membranes, *THE JOURNAL*, February 5, p. 409) the ordinary fixed oils and fats employed in making ointments are poor carriers for other drugs when penetration into the systemic circulation is the object. The chief exception to this rule among the heavy metals are mercury and inorganic mercurial compounds. With regard to absorption by rectum of drugs introduced in the form of suppositories, the chances for absorption are theoretically more promising but there is no record of the successful administration by that route of the drugs mentioned in the treatment of syphilis.

STRONTIUM BROMIDE

To the Editor:—I should like advice on the advantages and disadvantages of strontium bromide over other forms when bromide therapy is indicated. Would the addition of calcium gluconate increase the value of the bromide prescription?

J. M. BAILEY, M.D., Hopewell, Va.

ANSWER.—The theory that strontium salts would be more slowly absorbed and therefore have a more gradual and milder action has been proved to be without foundation. The strontium salts are more expensive. Calcium compounds are not sufficiently well absorbed to exert a systemic sedative effect.

LIQUID PETROLATUM

To the Editor:—Is there any harm to a patient who takes plain mineral oil daily for many years? Is there any brand of mineral oil that is best, and are all brands sold by druggists in gallon lots just as good as those sold at a much higher price by the physicians' supply houses? One woman patient told me that she has taken mineral oil at night for over twenty years for constipation.

THOMAS C. HINKLE, M.D., Onaga, Kan.

ANSWER.—There is probably no definite or serious harm likely to result from the taking of liquid petrolatum daily even for many years. One objection that has been raised against such a practice is that it may rob the system of fat soluble vitamins. Diversion of fat soluble vitamins may be minimized by administering the oil on an empty stomach. However, a liberal intake of vitamins is likely to compensate for any that might be lost in the oil. There is no essential difference between various brands of mineral oil excepting as to viscosity.

HYPERTENSIVE RETINITIS OR FUNDUS INJURY
FROM BRIGHT LIGHT

To the Editor:—A man, aged 55, left for work one morning feeling in good health. He has no history of previous eye trouble. He was testing light bulbs when a bright light flashed in his face, blinding him in one eye. He immediately reported this fact to his foreman, who disregarded it. His lawyer referred him to me for my professional opinion as to whether the flash of light was the exciting factor in causing his blindness. External examination of the right eye gave negative results. I could find no evidence of malingering after testing him in several ways. Fundus examination showed an old occlusion of the central retinal artery. There is moderate sclerosis of the retinal artery with marked areas of angiospasm. There is a small hemorrhage along the superior nasal artery. The left eye shows similar vascular changes; namely, moderate sclerosis and angiospastic changes. There is a small hemorrhage along the inferior temporal artery, and about the macula are areas of exudate. A diagnosis of old occlusion of the central retinal artery in the right eye was made, with moderate sclerosis of the retinal arteries and hypertensive retinitis with hemorrhage in both eyes, all conditions being due to the cardiovascular status of the patient. Physical examination revealed the heart enlarged and the rhythm normal. The blood pressure was 230 systolic, 130 diastolic. Could the flash of light have been the exciting factor in causing this man to have unilateral blindness?

M.D., Michigan.

ANSWER.—The diagnosis of hypertensive retinitis with hemorrhages is probably correct and that of course is enough to explain the poor vision and optic atrophy. The general picture of cardiorenal disease is sufficient to cause the retinal arteriosclerosis and the occlusion of the central artery.

Any optic nerve change that could come from a flash of light would require months to develop. A flash of light may cause disturbances of the fundus in two ways; usually (the type of condition which is seen following watching the sun during an eclipse) there is a macular edema which may subside and leave no visual disturbance or visible sign. The edema may take the form of a cyst, which may rupture and leave a hole in the macula with a permanent central scotoma and poor vision. This may be followed by a partial retinitic optic atrophy. The retinal blood vessels would not be disturbed in such a case. It is possible, but rarely happens, that optic neuritis may follow severe exposure to light, usually sunlight. This would produce a picture of secondary optic atrophy with slight changes in the retinal blood vessels.

The patient's condition probably was entirely independent of the flash of light. The vision in this eye may have been poor for a considerable period and merely discovered suddenly following the flash of light.

SODIUM THIOSULFATE IN SYPHILIS

To the Editor:—Does the administration of a solution of sodium thiosulfate intravenously have a place in the treatment of syphilis? Is it spirocheticidal? I have a patient with whom the administration of preparations of both arsenic and bismuth must be suspended for some time and for whom the sodium thiosulfate is rapidly clearing up a dermatitis of long standing. Will the sodium thiosulfate also be a factor in the treatment of this patient's syphilis?

M.D., New Mexico.

ANSWER.—Sodium thiosulfate was popularized as a remedy for postarsphenamine dermatitis and certain other metallic poisonings by the work of McBride and Dennie in 1923. The evidence accumulated then and which has continued to accumulate as to its value in the treatment of metallic poisoning is of two varieties. Laboratory studies calculated to measure the excretion of arsenic or of certain other heavy metals in experimental animals and human beings with or without the added influence of sodium thiosulfate have been completely contradictory. Certain investigators have found that the excretion of heavy metals was increased by the use of sodium thiosulfate, while others have found the precise opposite. On the whole the laboratory investigations on this point, both in animals and in human beings, have been incomplete and unconvincing.

There have been numerous reports of the use of the drug in the treatment of exfoliative dermatitis, other types of arsenical treatment reactions, and in other types of skin diseases not associated with the treatment of syphilis. These reports are for the most part of individual cases or of small groups of cases. They deal with arsenical reactions or nonarsenical and non-syphilitic skin diseases, which, without any treatment, have an extremely variable course; and the reports of the value of sodium thiosulfate in these conditions are, to the critical observer, as unconvincing as the laboratory work.

So far as arsenical reactions are concerned, the opinion of syphilologists is divided, one group of observers feeling that the drug is of some value largely on the basis that one or a few patients treated with it have recovered, whereas another group of observers feels that the drug is completely valueless, that the reported recoveries are not adequately contrasted with a control material, and that in the type of cases reported recovery might have occurred as promptly without as with sodium thiosulfate.

The drug has no spirocheticidal action and is completely without value in the treatment of syphilis. It has been uncritically proposed as a method of treatment for so-called Wassermann fast syphilis, but there is no rationale to its use in this condition and no reason to believe that anything is accomplished by its use in any form of syphilis.

As far as known, sodium thiosulfate does no serious harm and it may be a valuable psychotherapeutic measure for both physician and patient in the sense that it persuades both of them that something is being done for the patient's illness.

References:

- Oppenheim, M., and Fantl, P.: Sodium Thiosulfate and Therapy of Skin Diseases Caused by Arsenic Compounds, *Arch. f. Dermat. u. Syph.* 175: 438 (April) 1937.
van den Branden, F.; Appelmans, M., and Pottier, R.: Toxic Effect of Tryparsamide Mixed with Sodium Thiosulfate on Renal Parenchyma, *Ann. Soc. belge de méd. trop.* 16: 121 (March 31) 1936.

PREGNANCY AFTER THROMBOPHLEBITIS

To the Editor:—A normal, healthy primipara, aged 24, was observed throughout a normal gestation and delivered normally of a healthy child in 1930. On the tenth postpartum day, after being out of bed in a wheel chair for the first time, the patient had a fever, and phlegmasia alba dolens of the left leg ensued. Blood cultures were negative. Three months' hospitalization followed, and then a very gradual resumption of minimum activity. A moderate varicosity of the left leg and swelling, particularly after unusual activity (dancing) persist with gradual improvement in the degree of swelling. An elastic stocking has been worn with relief. An eminent authority proposes to inject the varicosity following high ligation. Numerous varying opinions concerning the advisability of another pregnancy have been rendered. The attitude of the patient is bitter—she fears a repetition of the experience. If good care under favorable circumstances prevails, is subsequent pregnancy inadvisable? What is the likelihood of sterility following the puerperal fever? Are similar complications more prone to develop once having occurred?

M.D., New York.

ANSWER.—Thrombophlebitis complicating a pregnancy is not likely to repeat itself in a subsequent gestation, particularly when an interval of seven or eight years has elapsed. The leg veins have undoubtedly become obliterated as a result of the thrombotic process. The edema which is present at this time, particularly following exercise, is the result of the obliteration of important venous channels.

In all probability it would be safe for the patient to become pregnant again. An intelligent explanation of the underlying mechanism should result in the proper attitude on the part of the patient. One cannot guarantee that such a complication will not recur but, if experience is of value, one would not expect a repetition of this complication.

The value of high ligation and injection of the varicosity that is present would have to be determined by examination of the patient. This procedure is commonly resorted to with favorable results.

The likelihood of sterility following puerperal fever would depend on the extension of the inflammatory process. The veins of the pelvis may have been involved but the reproductive organs could easily have escaped any extensive injury. If this should be the case, one would expect normal reproductive organs. In the event that the patient fails to conceive after a limited trial, visualization of the reproductive tract by the injection of opaque substances and x-ray studies will determine the patency of the tubes.

ECTODERMAL DYSPLASIA

To the Editor:—A and B are married and have a daughter 15 months old, normal and in the best of health. B, the wife, has a brother, aged 24, with ectodermal dysplasia. This brother has no teeth, a scanty growth of hair around the periphery of the calvaria, a saddle back nose and no sweat glands. His Wassermann test is negative. Another brother had ectodermal dysplasia but died at 18 months. One sister, unmarried, and B are both normal and well. B's mother and father were first cousins; their mothers were sisters. Going back two generations in B's family, there is no known history of ectodermal dysplasia except the two instances mentioned. Examination of A's lineage reveals no known instances of ectodermal dysplasia. What advice can be given to A and B concerning additional children? Is ectodermal dysplasia hereditary? If so, does it follow the sex-linked pattern of hemophilia? Similarly, what advice should be given to B's unmarried sister? Kindly include references in your reply.

M.D., New York.

ANSWER.—With the subject matter concerned in the questions being in the case history stage, categorical answers can hardly be given to these questions. This subject is well discussed in a work by E. A. Cockayne entitled "Inherited Abnormalities of the Skin and Its Appendages" (New York and London, Oxford University Press, 1933). A discussion of this subject, together with pertinent literature and case histories, will be found beginning on page 218.

AMENORRHEA AND DEMENTIA PRAECOX

To the Editor:—A woman, aged 36, never married, began scanty menstruation at the age of 14. Until about six months ago she was healthy in every way except that there was only occasional menstruation. She has never suffered headaches or cramps or had any signs of the usual trouble expected with so definite an absence of menstrual flow. She has a sister one year older, who has had the same experience but is married and has one child. The patient developed dementia praecox about six months ago. She was violent and uncontrollable and required morphine and scopolamine with restraint for several weeks. She was given within a month about twenty-five injections of theelin in oil, 2,000 units each. She improved promptly and menstruated a slight amount on one day only, two weeks after the last injection of theelin of that course. She later suffered from terrific headaches, which have continued until the last few days, when they have been relieved by daily injections of 0.5 cc. of gynergen (ergotamine tartrate) supplemented by oral administration of ergotrate, the maleate of the new ergot base (to which the name ergonovine was given by the Council on Pharmacy and Chemistry), made by Eli Lilly. At the present time she is receiving more theelin in the dosage of 10,000 units daily and gynergen occasionally. What is the opinion of this type of medication? Would you suggest more theelin? If so, how much? Would you suggest some corpus luteum? I shall be glad to have any suggestions as to future treatment or advice.

M.D., Indiana.

ANSWER.—Not much is known about the specific cause or causes of dementia praecox. It is conceivable that such an illness may result from biologic or psychologic factors or, more likely, both. Proper psychiatric care in addition to injections of endocrine substances would undoubtedly be excellent treatment. Injections of theelin or progynon, the latter given in doses of 2,000 rat units twice a week for a period of about a month, might be tried. Should the patient not improve, insulin or metrazol treatment at a later date might be considered.

"WHITE FINGERS" FROM OPERATING AIR HAMMERS

To the Editor:—I have recently discovered among our employees operating light air hammers a vasospastic condition affecting one or more of the fingers used to guide the hammer. The hammers weigh from 5 to 7 pounds and have a frequency of 3,000 strokes per minute. The vasospasm is noted only when the hand is exposed to cold. This condition has been named stone cutters' disease and pneumatic hammer disease. I should be grateful to you for any information you may have concerning the etiology, pathology and treatment of this condition. Is this a compensable occupational disease?

M.D., Michigan.

ANSWER.—This query describes a characteristic industrial disease known as "white fingers." It may be the same as the disease termed "dead fingers," perhaps first described by Loriga in 1911 and later by Barnes of St. Louis. In this country, chief attention to it has been found in Milwaukee, the stone cutting areas of Indiana, and the automobile industry of Detroit. Although in pneumatic hammer work a variety of occupational diseases may arise, in this particular condition the part played by cold is essential. Clearly it may be differentiated from chilblains, neuritis, neuroses, Raynaud's disease, acroparesthesia, erythromelalgia and scleroderma. The chief features of white fingers are the following:

1. It is not symmetrical as a rule.
2. It is limited to workers manipulating vibrating tools under conditions providing exposure to cold.
3. On right-handed persons it usually affects only the fingers of the left hand.
4. It is not associated with pain, redness or edema.
5. There are no sensory changes of a persistent character.
6. No changes occur in the blood vessels.
7. There is absence of muscular weakness, tremors or cramping.
8. It affects only the fingers, usually starting with the index finger on the outer half, and it does not extend up the hand or arm.

This disease and others from which it must be differentiated are well described in the League of Nations' Encyclopedia of Occupation and Health under the section devoted to pneumatic tools. The disease frequently is disabling for customary work and may prevent such other activities as the driving of an automobile. When once well established during a given winter, it may not disappear until the coming of warm weather. Obviously, it may be prevented by the provision of work conditions freed from low temperatures. However, some benefit may be derived from changing the size of the grasped portion of the tool, by cushioning the tool with cork or sponge rubber, and by lowering the rate of vibration. Temporary relief may be procured by massage or by hot water baths. The disease is compensable when disability arises, in all states providing blanket coverage for occupational diseases. In certain states operating under scheduled systems for occupational diseases coverage, compensation might be provided because of liberal interpretation of the unusually included item "compressed air disease." What may take place in the state of Michigan is

uncertain, since the new occupational disease law in that state has not led to any considerable number of decisions. However, under Michigan's new occupational disease reporting law, every instance of the condition should be reported.

HEMIATROPHY OF JAW

To the Editor:—A girl about 15 years of age has an inequality in the development of the lower jaw. One side is slightly smaller than the other. So far as I can learn there is no definite known cause for this. I would appreciate some information as to the probable cause and the treatment, if any.

M.D., North Carolina.

ANSWER.—Hemiatrophy is a perplexing problem, as its etiology is obscure. It is usually confined to the face either as a whole or principally to the areas supplied by the individual branches of the fifth nerve. There is at times a history of a forceps delivery, but there is little evidence that forceps injury can be the actual cause.

In one case the mother had atrophy of the left side of the face but no other pathologic condition except a malocclusion of the teeth, while her daughter, aged 6 years, had not only typical atrophy of the left side of the face but an adhesion of the tongue to the mandible and side of the pharynx, the left arch of the palate being elevated by the attachment.

Atrophy in general may be from malnutrition, senility, disuse or pressure, but hemiatrophy, whether localized in the face or a complete hemiatrophy of the body, seems to present more evidence of a neuropathic influence. Atrophy of the side of the face occurs at times in lesions of the fifth nerve, in some cranial lesions and wasting of the skeletal muscles in destruction of the anterior cornu of the spinal cord.

Thyroid has been mentioned as being beneficial but in most such cases improvement seems to be quite hopeless.

Benjamin Feinsilver and Herman M. Rosow reported a case of total hemiatrophy in *THE JOURNAL*, January 29, page 366, and gave a bibliography up to 1932.

PRINTERS' SPRAY AND METHYL ALCOHOL

To the Editor:—A spray which I understand is used generally in the printing trades consists of essentially denatured alcohol, gum arabic and gum tragacanth. Printers breathe this spray and in a room where several sprays are in operation the room is rather foggy with it. The men do not seem to be particularly affected. Over a period of years, may it be injurious to their health? How much danger is there from the denatured alcohol made up in accordance with the formula which contains methyl alcohol as a denaturant?

H. G. MURRAY, M.D., Framingham, Mass.

ANSWER.—The trade practice mentioned in this query has come into wide application in offset printing work. In addition to the ingredients mentioned, some use may be made of starch and glycerin. In one recent instance a definite anaphylactic asthma in a printer was traced to the sensitizing action of gum arabic used in these sprays and apparently the difficulty was eliminated by substituting starch for gum arabic. The chief complaints that have arisen center not about the liquid spray but about the dust created, since rapid drying of the spray is essential to the process. This means that the alcohol, with the possible content of 5 per cent methyl alcohol, is quickly evaporated and is present as a vapor. A denaturant of less dangerous nature than methyl alcohol is to be preferred. Additional experience may establish the necessity for the installation of an exhaust system to remove both vapors and dusts in order that printers may not be exposed. If long continued exposure is to be encountered, such systems may be useful as precautionary measures.

RESISTANT UROLOGIC INFECTION

To the Editor:—In attempting to treat with mandelic acid a patient who has consistently shown 2 plus and 3 plus pus in the urine I have never succeeded in securing acidification of the urine greater than a *pn* of 6 in spite of large doses of ammonium chloride, which I have used in conjunction with several preparations of ammonium mandelate. I believe that if I could secure acidification of the urine I could expect a decrease in the urinary infection, in view of my results in previous cases. I would appreciate information relative to securing the necessary acidification so essential in mandelic acid therapy. The urinary infection apparently dates back six years to an attack of urinary lithiasis, which necessitated operative removal. Since then he has had periodic attacks of fever associated with urinary symptoms.

ALBERT IRVING CLARK, M.D., Galveston, Texas.

ANSWER.—Such difficulties are frequently encountered. A complete urologic investigation should be carried out in order to eliminate the possibility of any complicating factors prolonging the infection or interfering with proper therapy. Cultures of the urine should be made, as the infecting organism in this case may belong to the genus *Proteus*, and in such instances

proper acidification to allow the use of mandelic acid is impossible. If after a complete urologic check there are no complicating factors which must be treated first, sulfanilamide therapy may be tried. Two Gm. (40 grain) doses daily for a period of one week out of every three over a period of two months will probably be required. During the administration of this drug the patient should be under the care of the physician and should be observed frequently in order to guard against any untoward reactions. Further study of the urine should be made for the presence of cocci and, if these are present, all foci of infection should be investigated and eradicated if possible. Coccal organisms occasionally respond well to intravenous injections of nearsphenamine in 0.2 to 0.3 Gm. doses given five days apart, and not more than two injections should be given. The latter drug should never be given while the patient is taking sulfanilamide.

WASSERMANN FAST SYPHILIS

To the Editor:—A white woman aged 22 had mucous patches in January 1934. The Wassermann reaction was 4 plus. She was given injections of nearsphenamine 0.6 Gm. and bismuth salicylate in oil (amount not known) weekly. The Wassermann test became negative in four months. This treatment was continued until June 1934, when she had a rest period of two months. This was followed by similar treatment until March 1935. The Wassermann reaction remained negative. In November 1936 the Wassermann reaction was 4 plus. She was put on bismuth salicylate in oil 2 cc. weekly for twelve injections and then returned to the bismuth salicylate for a similar course. The Wassermann reaction was then 2 plus. Another course of nearsphenamine 0.6 Gm., of twelve weekly injections, was followed by a course of bismuth salicylate in oil. The Wassermann reaction was then 3 plus. The patient was put on mapharsen 0.06 Gm. for twelve weeks and is now getting aqueous bismuth subtartrate 3 per cent 1 cc. twice weekly and saturated solution of potassium iodide 15 drops three times a day. The Wassermann reaction is now 4 plus. Spinal fluid examination last month gave entirely negative results. The patient is 5 feet (152 cm.) tall and weighs 99 pounds (45 Kg.). Physical examination, including neurologic, ophthalmologic, cardiac and hepatic tests, give negative results. Since coming under my observation she has had no rest periods. Please outline further treatment. Is the patient infectious? If the patient becomes pregnant and continues treatment, would she deliver a normal, healthy baby? Would you consider her Wassermann fast?
M.D., New York.

ANSWER.—The definition of Wassermann fastness, either in early or in late syphilis, is arbitrary. In early syphilis the term is usually applied to those cases in which the serologic test remains persistently positive under treatment for six months or longer; in late syphilis to those in which the tests remain positive for one year or longer. According to this definition the patient described is Wassermann fast. In all probability the factor accounting for the persistently positive blood Wassermann reaction is the intermittent treatment with interpolated rest periods within the first two years of her infection.

The variation in her Wassermann test since November 1936 from 4 plus to 2 plus, 3 plus and then 4 plus again is of no significance or importance and may be ascribed merely to the fact that the patient has only a small quantity of reagin in her blood.

In all probability and in view of her continuous treatment since November 1936, she is not infectious. If she becomes pregnant and continues treatment throughout the course of her pregnancy, there is nearly absolute certainty that the child would be normal, healthy and nonsyphilitic.

The management of a case such as this was described in detail in an article by Joseph Earle Moore and Paul Padgett entitled *The Problem of Seroresistant Syphilis*, in *THE JOURNAL* January 8, 1938, page 96.

OPERATIONS FOR CONGENITAL DISLOCATION OF HIPS

To the Editor:—A woman, aged 26, with a bilateral congenital dislocation of the hips, was advised when she was 9 that nothing could be done for her. Have there been any recent surgical procedures which have been used successfully in these cases?
M.D., New York.

ANSWER.—Roentgenograms of the pelvis help materially in determining the appropriate surgical procedure in an individual case. The two chief types of operations that are performed for this condition are (1) the so-called "shelving operations" (which should be "roofing operations") and (2) the so-called bifurcation operations.

Koenig performed a shelf operation for congenital dislocation of the hip in 1891. Ferguson in 1904 and Clarke in 1909 performed similar operations. Albee suggested a bone wedge graft remodeling operation. Maclaure in 1922 reported the use of osteoperiosteal grafts in forming a shelf. Dickson in 1924 reported five cases in which a wedge of bone from the iliac

crest was used to hold the shelf in position. Lance of France reported a similar procedure, with the use of osteoperiosteal grafts to hold the shelf in position. Gill reported a similar procedure. Hey Groves described four different operations to accomplish the same purpose. Spitzzy suggested a shelf operation in which the shelf was made from a massive graft from the ilium and the head was held in position by another graft driven into the acetabulum. Soutter fashioned a shelf out of a piece of bone taken from the anterior surface of the neck, trochanter and shaft of the femur, wedging it into the ilium above the head.

In the bifurcation operation usually spoken of as the Lorenz operation (in reality von Baeyer described it earlier) an oblique osteotomy of the femur is performed with the upper end of the cut at the level of the acetabulum. The distal end of the bone is placed in the acetabulum, forming a Y. This operation is used especially in old, irreducible bilateral cases: it restores the anteroposterior equilibrium of the body, thus overcoming lordosis and eliminating pain.

In the bifurcation operation, Putti advises that the lesser trochanter be attached to the proximal fragments.

A good description of the bifurcation operation is given by Rudolph S. Reich in the *Journal of Bone and Joint Surgery* 7:598 (July) 1925.

DYSMENORRHEA

To the Editor:—A woman, aged 30, married eight years, a nullipara, began menstruation at the age of 14 and has continued regularly every twenty-eight to thirty days. The flow has been moderate. Severe dysmenorrhea has been present always, the pain starting an hour or two before the flow and persisting severely for about twenty-four hours. Relief is obtained only with hypodermic injections of morphine or pantopon. Oral medication has been ineffectual. The pain seems fully as severe as the pain of gallstone colic. Up to six months ago the agonizing pain was the only disorder. For the last six months, however, the patient has been very nervous and feels weak for about a week before and a week after menstruation. The temperature has often been from 99 to 99.6 F. during this time. Twice she fainted about a day after the onset of the menses, and the feeling of impending syncope has become so constant that I keep her supplied with strychnine. The amount and duration of the flow have not changed. About five years ago a dilation and curettage was performed, with no change in symptoms. About ten years ago a nontoxic adenoma of the thyroid was removed. Physical examination is negative throughout and no abnormalities of the pelvic organs were noted. The patient is entirely well for the two weeks between periods. She does not appear to be "nervous" or afraid of pain. The blood, urine, blood chemistry determinations and electrocardiogram are normal. The basal metabolism is minus 20, though the pulse is about 75 to 80. Do you think that any glandular medication is indicated and, if so, what? (I did try antuitrin-S, but it made her "weak and trembly," so I discontinued it.) Would not a surgical menopause be justified, in view of the years of suffering that seem to portend? Is there any danger in using x-rays to induce the menopause? I would appreciate your advice as to specific directions in treatment.
M.D., N. Y.

ANSWER.—The medication of severe dysmenorrhea is often unsatisfactory. This is due to the fact that the cause of painful menstruation is often difficult to determine. One should always consider the possibility of endometriosis in patients who have had symptoms of long standing. Allergic conditions are responsible for dysmenorrhea in some cases (Schwarz, Otto, and Smith, Dudley: *Essential Dysmenorrhea and Allergy*, *Am. J. Obst. & Gynec.* 33:331 [Feb.] 1937).

The only endocrine preparation which has been found to be of value in some cases of dysmenorrhea is progestin. This will cause the relaxation of the uterine musculature so that patients may be benefited in whom excessive uterine motility is the cause of the dysmenorrhea. Progesterone can be given in doses of 1 rabbit unit on each of three days prior to the onset of menstruation. It is sometimes advisable to give 2 rabbit units the days the menses begin. Of course, this therapy will have to be repeated each month in order that the patient may continue to obtain relief by means of the medication. Antuitrin-S is probably of no value for this purpose.

It is almost never justifiable to consider either a surgical or an irradiation menopause for dysmenorrhea in a woman of 30. The sudden climacteric may prove to be stormy. Furthermore, few women reconcile themselves to the premature termination of their reproductive period. Possibly parasympathectomy rather than an artificial menopause should be considered in stubborn cases that resist all other forms of treatment. There is no great danger in inducing the premature menopause by x-rays when this measure is indicated. The surgical approach, however, is to be performed in young women because a hysterectomy can be done and the ovaries and tubes can be left behind, thereby preventing the immediate onset of the climacteric. The surgical approach likewise would rule out the possibility of a pathologic condition which might be responsible for the severe dysmenorrhea.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in *THE JOURNAL*, June 25, page 2174.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination, Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF INTERNAL MEDICINE: *Written examination* will be held at various centers of the United States and Canada, Oct. 17. *Final date for filing applications is Sept. 1.* Chairman, Dr. Walter L. Biering, 406 Sixth Ave., Suite 1210, Des Moines, Iowa.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written examination for Group B candidates* will be held in various states of this country and Canada, Nov. 5. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Washington, D. C., Oct. 8, and New York, Oct. 7. *All applications should be filed immediately and case reports, in duplicate, must be filed not later than sixty days before the date of examination.* Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF PEDIATRICS: Detroit, October 26; Rochester, N. Y., November 13; and Oklahoma City, November 15. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

California Reciprocity and Endorsement Report

Dr. Charles B. Pinkham, secretary, California State Board of Medical Examiners, reports fifty-six physicians licensed by reciprocity and thirteen physicians licensed by endorsement from Jan. 3 through March 31, 1938. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine.....	(1920)		Arkansas
Stanford University School of Medicine.....	(1934)		Minnesota
University of Colorado School of Medicine (1933), (1936, 2)			Colorado
Yale University School of Medicine (1921) New York, (1930)			Penna.
George Washington University School of Medicine.....	(1927)		New York
Georgetown University School of Medicine.....	(1923)		Minnesota
Emory University School of Medicine.....	(1936)		Georgia
University of Georgia Medical Department.....	(1931)		Georgia
Northwestern Univ. Medical School. (1932) Minnesota, (1936)			Utah
Rush Medical College.....	(1927)		New York
School of Med. of the Division of Biological Sciences..	(1934)		Illinois
University of Illinois College of Medicine.....	(1935)		Illinois
Indiana University School of Medicine.....	(1933)		Indiana
State University of Iowa College of Medicine. (1931), (1933)			Iowa
University of Kansas School of Medicine.....	(1936)		Kansas
Medical School of Maine.....	(1910)		Maine
Johns Hopkins University School of Medicine.....	(1930)		Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1936)		Maryland
Tufts College Medical School.....	(1920)		Mass.
Detroit College of Medicine and Surgery....	(1928), (1929)		Michigan
University of Michigan Medical School.....	(1934)		Michigan
University of Minnesota Medical School... (1932, 2), (1928)			Minnesota
Washington Univ. School of Medicine. (1904), (1913), (1934)			Missouri
Creighton University School of Medicine.....	(1932)		Nebraska
(1935) New Jersey, (1936) Arizona, Kansas			
University of Nebraska College of Medicine.....	(1933, 2)		Nebraska
Columbia Univ. College of Physicians and Surgeons..	(1922)		New York
New York Homeopathic Medical College and Flower Hospital			New York
Ohio State U			Ohio
University of Oregon Medical School..	(1929) Oregon, (1932)		Oklahoma
Jefferson Medical College of			Penna.
Temple University School of			Penna.
University of Pennsylvania			S. Dakota
Medical College of the State			S. Carolina
Vanderbilt University School of Medicine.....	(1928), (1931)		Tennessee
University of Manitoba Faculty of Medicine.....	(1928)		N. Dakota
University of Durham College of Medicine, England..	(1924)*		Minnesota
Licentiate of the Royal College of Physicians of Ireland and Licentiate of the Royal College of Surgeons in Ireland	(1923)		Michigan

School	LICENSED BY ENDORSEMENT	Year Grad.	Reciprocity with
College of Medical Evangelists	(1935)	N. B. M. Ex.	
Columbian University Medical Department.....	(1893)	U. S. Navy	
George Washington University School of Medicine.....	(1935, 2)	N. B. M. Ex.	
Georgetown University School of Medicine.....	(1915)	U. S. Navy	
Harvard University Medical School..	(1930), (1932), (1933)	N. B. M. Ex.	
St. Louis University School of Medicine.....	(1934)	N. B. M. Ex.	
Western Reserve University School of Medicine.....	(1926)	U. S. Navy	
Vanderbilt University School of Medicine.....	(1933)	N. B. M. Ex.	
University of Vermont College of Medicine.....	(1933)	N. B. M. Ex.	
McGill University Faculty of Medicine.....	(1934)	N. B. M. Ex.	

* License has not been issued.

Rhode Island January Examination

Mr. Robert D. Wholey, chief, Division of Examiners, reports the oral, written and practical examination held by the Board of Examiners in Medicine at Providence, Jan. 6-7, 1938. The examination covered twenty subjects and included fifty questions. An average of 80 per cent was required to pass. Seven candidates were examined, all of whom passed. Five physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
State University of Iowa College of Medicine.....	(1934)		91
Boston University School of Medicine.....	(1935)		86
Harvard University Medical School.....	(1936)		87, 89
Long Island College of Medicine.....	(1936)		80
Vanderbilt University School of Medicine.....	(1930)		92
Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia.....	(1935)		90

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
Georgetown University School of Medicine.....	(1935)	N. B. M. Ex.	
University of Maryland School of Medicine and College of Physicians and Surgeons.....		M. Ex.	
Boston University School		M. Ex.	
University of Nebraska Co		M. Ex.	
Syracuse University Colle		M. Ex.	

Colorado January Report

Dr. Harvey W. Snyder, secretary, Colorado State Board of Medical Examiners, reports the written examination held at Denver, Jan. 5-7, 1938. The examination covered 8 subjects and included 165 questions. An average of 75 per cent was required to pass. Six candidates were examined, all of whom passed. Eight physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Colorado School of Medicine.....	(1936)		80
Northwestern University Medical School.....	(1937)		81, 83
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin	(1903)		78
Osteopaths*			75.5, 82

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
College of Medical Evangelists.....	(1936)	Washington	
State University of Iowa College of Medicine.....	(1933)	Iowa	
Tulane University of Louisiana School of Medicine.....	(1921)	New York	
University of Michigan Medical School.....	(1934)	Michigan	
Washington University School of Medicine.....	(1932)	Missouri	
University of Nebraska College of Medicine.....	(1936, 2)	Nebraska	
Columbia Univ. College of Physicians and Surgeons (1913)		Missouri	

* Licensed to practice medicine and surgery.

Oregon Reciprocity and Endorsement Report

Dr. Joseph F. Wood, secretary, Oregon State Board of Medical Examiners, reports three physicians licensed by reciprocity and two physicians licensed by endorsement from Feb. 17 through May 6, 1938. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
State University of Iowa College of Medicine.....	(1936)		Iowa
University of Nebraska College of Medicine.....	(1927)		Nebraska
University of Pennsylvania School of Medicine.....	(1927)		S. Dakota

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
University of Michigan Medical School.....	(1932)	N. B. M. Ex.	
University of Oregon Medical School.....	(1934)	N. B. M. Ex.	

Georgia Reciprocity and Endorsement Report

Mr. R. C. Coleman, joint-secretary, State Examining Boards, reports nine physicians licensed by reciprocity and one physician licensed by endorsement from Jan. 1 through June 15, 1938. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University College of Medicine.....	(1935)		Virginia
University of Louisville School of Medicine.....	(1936)		Kentucky
Tulane University of Louisiana School of Medicine.....	(1931)		N. Carolina
Western Reserve University School of Medicine.....	(1933)		Ohio
Jefferson Medical College of Philadelphia.....	(1926)		Ohio
Medical College of the State of South Carolina.....	(1935)		S. Carolina
University of Tennessee College of Medicine.....	(1937)		Tennessee
Medical College of Virginia.....	(1930)		Penna.
University of Virginia Department of Medicine.....	(1930)		Virginia

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
Harvard University Medical School.....	(1933)	N. B. M. Ex.	

Book Notices

New and Nonofficial Remedies, 1938, Containing Descriptions of the Articles Which Stand Accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1938. Cloth. Price, \$1.50. Pp. 590. Chicago: American Medical Association, 1938.

Perhaps the most noteworthy feature of the 1938 edition of *New and Nonofficial Remedies* is the revision of the chapter on vitamin preparations to bring to date the valuable list of "allowable claims." As knowledge increases with the isolation of the crystalline vitamins and experimentation with them, greater simplification may be expected. One notes the addition in this volume of riboflavin (vitamin B₂ or G), and it is understood that thiamin chloride (vitamin B₁) will be in the next edition.

Other new substances described in this volume are sulfanilamide and protamine zinc insulin, with the accepted brands. The proved value of these new additions to the physician's armamentarium bids fair to make the past year a milestone in therapeutic progress. The Council is to be congratulated on the promptness with which it evaluated these drugs and established standards for their adequate control. From the first the Council warned against using sulfanilamide in untried combinations. The sad tragedy of the deaths from the rashly introduced Elixir of Sulfanilamide-Massengill starkly emphasizes the value of such a body as the Council to the medical profession and the pharmaceutical manufacturers as well as to the public. Of course this potential value cannot become effective as long as those concerned refuse to follow the Council in the use of new remedies.

Other noteworthy new drugs which appear in *New and Nonofficial Remedies 1938* are avertin with amylene hydrate, vinethine, pontocaine hydrochloride, basal, general and local anesthetics respectively; mandelic acid, a new urinary antiseptic; novatropine and syntropan, synthetic mydriatics.

Among the products omitted from this year's volume, of which there is about the usual number, either for conflict with the rules or as being off the market, are all the creosote and guaiacol preparations that have stood accepted for so many years. In a careful revaluation of these preparations extending over two or three years the Council came to the conclusion that they should be relegated to the therapeutic scrap heap, at the same time announcing that the matter would be reconsidered if and when interested manufacturers could present new and convincing evidence.

No review of an annual volume of *New and Nonofficial Remedies* would be complete without a word of praise and appreciation for the Council, the tireless and freely given labor of whose members makes possible this valuable manual of therapeutic progress.

Bienengift als Heilmittel. Von Dr. Robert Schwab, Innere Abteilung des Julius-Hospitals in Würzburg. Boards. Price, 2.40 marks. Pp. 48, with one illustration. Leipzig: Georg Thieme, 1938.

Bee venom is recommended in the warfare against rheumatism, a disease so common as to exceed even tuberculosis (12 per cent as against 10 per cent in 1931). This remedy, known to popular medicine for thousands of years, has only of late been employed by physicians and, it seems, with a certain degree of success. The original method of employment was the bee sting as a result of the ancient observation that bee keepers became immune not only to bee stings but also to rheumatism. It seems, on the other hand, that the patient with rheumatism is a priori immune against the bee stings (primary negative phase). It is only after several stings that the local reactions occur (secondary positive phase), which is followed by a secondary negative phase, and it is during this that it is claimed the healing occurs. The suggestion is advanced that rheumatism, which is an allergic reaction, may be favorably influenced by the induction in this manner of a refractory phase, which may be of value also in other allergic conditions, such as hay fever. Bee poison has been produced in relatively pure form and made available in dilutions for administration by injection and of late also in ointment form. This salve, the exact composition of which is not given, is said to contain minute crystals which on inunction damage the skin sufficiently to permit percutaneous absorption. The penetration is improved by means of iontophoresis and still more

by the additional employment of histamine. One naturally wonders whether this combination of bee poison with histamine, iontophoresis, which in itself is claimed to be useful in rheumatism, may not be an admission that the results secured by the bee poison alone are not entirely satisfactory.

The Diagnosis and Treatment of Sexual Disorders in the Male and Female Including Sterility and Impotence. By Max Huhner, M.D., Attending Genitourinary Surgeon, Bellerue Hospital, Out-Patient Department, New York City. Cloth. Price, \$5. Pp. 490, with illustrations. Philadelphia: F. A. Davis Company, 1937.

The book called "Disorders of the Sexual Function," first published by this author in 1917, was reprinted eleven times between 1917 and 1921. The second revised edition was reprinted ten times up to 1929, when the third edition was published. The present work is not a revision but an entirely new work, largely because of the great discoveries that have been made in the field of sexual disorders during the past twenty-five years. Today these disorders lie midway between pure neurology and psychiatry and pure genito-urinary pathology. In the present book the entire subject of impotence has been rewritten. There are discussions of the Steinach operation, the influence of the endocrine system, the Freudian point of view and similar subjects. There is also a new discussion on masturbation and of sterility and an abundant bibliography. Several contributions made by the author to various systems of medicine have also been developed into portions of this book. The volume is organized to include sterility, impotence, masturbation, pollutions, priapism, continence, sexual neuroses, enuresis, frigidity and many similar subjects. The book is based on a large practical experience and on a conservative attitude toward unestablished theories. It is among the most useful for the average physician who is occasionally concerned with such cases.

Practical Procedures. Edited by Sir Humphry Rolleston, Bt., G.C.V.O., M.D., and Alan A. Moorcleft, M.D., F.R.C.P. With a preface by Sir David Willsie, O.B.E., M.D., M.Ch. Published on behalf of The Practitioner. Cloth. Price, 10s. 6d. Pp. 293, with 66 illustrations. London: Eyre and Spottiswoode, Ltd., 1938.

This volume of the Practitioner handbook series is decidedly welcome, as it covers the borderland between medicine and surgery in a territory in which the well trained practitioner finds his most interesting and fruitful field. The aim of this book is to deal with practical procedures in a simple but detailed manner by experts who have experienced the pitfalls. It includes such items as plaster-of-paris technic, administration of fluids by injection, technic for blood transfusion, pleural aspiration, use of the catheter, injection treatment, local anesthesia and various topics of clinical laboratory diagnosis. It should be of real help to many a physician in need of such practical information and most especially to hospital interns and residents. Indeed, no hospital library should be without this little volume.

The Carnegie Foundation for the Advancement of Teaching. Thirty-Second Annual Report. Paper. Gratis. Pp. 202. New York City, 1937.

In the thirty-second annual report of the Carnegie Foundation, President Walter A. Jessup discusses the intensive competition now carried on between colleges for the recruiting of students. "We are familiar with the 'inducements' offered to promising athletes, but we may be astonished by the fact that drum majors and tuba players now find themselves possessed of special talents with a marketable value in the college field. Jobs and scholarships are dangled before the eyes of impecunious high school pupils. Fraternities and sororities vie in recruiting students who can pay their bills and bring glory (in press notices) to a chapter. The evil thread which runs through the fabric of recruitment devices is the attempt through them to exploit the student."

"Many institutions," continues Dr. Jessup, "today are giving renewed serious consideration to the selection of students adapted to their particular programs. The right selection of students, in accordance with a clear and understood institutional purpose, benefits not only the university or college that employs it but every undergraduate fortunate enough to enjoy its privileges. . . ."

"The president of a small college recently said 'We know that we are accepting students who cannot do our work. We know that we are carrying these students forward to gradua-

tion. In our present situation we are under such pressure that we feel we have no other choice. Our campus morale is affected by numbers and a reduction in attendance is looked upon as a slump—as though the institution were losing ground.”

Dr. Jessup writes “No college can be free from the necessity of competing with other institutions. The means adopted have perforce included some consideration of the relation of the college to the general public, for the typical college, beset on every hand with competition, must vie with its neighbors for public approval. In consequence, it has adopted devices common to other competitive social and economic enterprises. It has changed the nature of its catalogue. It has employed publicity agents. It has pressed its alumni into service as recruiting officers. It has issued neat and none too modest printed matter to attract students. Its ‘follow-up’ system is often very efficient indeed. And it has deemed itself forced to do these things by a feeling that it must struggle if it is to survive and go forward.”

The report contains a description of the purposes and activities of the foundation from its establishment in 1905 by Andrew Carnegie to the present day. It has disbursed more than \$32,769,900 for retiring allowances and widows' pensions in 168 colleges, universities and technical schools in the United States and Canada, for 2,621 individuals comprising 1,752 retired teachers and officers and 869 widows. The foundation has conducted numerous educational inquiries, some of the results of which have been published in twenty-eight bulletins, thirty-two annual reports and twenty-seven miscellaneous publications, comprising altogether some 15,000 printed pages.

Of the institutions which since 1905 have received from the Carnegie Foundation more than \$32,000,000 for retiring allowances and widows' pensions, Harvard University has had more than \$2,690,000, Columbia University \$2,341,000, Yale University \$2,042,000, Cornell University \$1,500,000, the University of Michigan \$1,075,000, the University of California \$927,000, the University of Toronto \$908,000, the University of Wisconsin \$786,000 and Princeton University \$744,800.

Copies of this report and any of the other publications of the foundation now in print may be had without charge on application by mail or in person to the office of the foundation at 522 Fifth Avenue, New York.

Bibliographie der Luftfahrtmedizin: Eine Zusammenstellung von Arbeiten über Luftfahrtmedizin und Grenzgebiete bis Ende 1936. Von Dr. Med. Ingeborg Schmidt, Leiterin der Bücherei und Assistentin am Luftfahrtmedizinischen Forschungsinstitut des Reichsluftfahrtministeriums Berlin. Paper. Price, 14 marks. Pp. 136. Berlin: Julius Springer, 1938.

This small volume in paper cover constitutes a comprehensive and excellent bibliography of aviation medicine, including 1936. Since the World War this newer specialty in medicine has kept abreast of the rapid expansion of aviation throughout the world, and research in the various phases has resulted in a rather heterogeneous literature. The compilation of a bibliography is timely and most serviceable to those interested in further studies of the medical aspects of aviation. The present work is divided into subheads including general considerations, psychophysiology of flight, altitude effects, atmospheric pressure, wind, cold, light and gravitational effects, diseases and injuries peculiar to flying, and the various aspects of hygiene and sanitation of aviation. It is catalogued by authors and lacks a cross subject index. This deficiency is of minor importance and should not keep the book from the reference shelves of flight surgeons and others interested in aviation medicine.

Collected Papers on Tuberculosis. By Sir Robert W. Philip, M.A., M.D., LL.D., Extra Physician to His Majesty the King in Scotland. Cloth. Price, \$7.50. Pp. 460. New York & London: Oxford University Press, 1937.

This volume of twenty-four collected essays and papers on tuberculosis comes from the pen of one whose medical career spans the era of modern knowledge of the disease. In the development of this knowledge and the means of controlling tuberculosis, the author has taken a prominent part by his pioneer work in the establishment of clinics and dispensaries for the study of the disease, methods of case finding, agitation for compulsory notification of active cases, and tuberculinotherapy. A graduate of medicine in the year that Koch announced the discovery of the causative organism of tuberculosis, the author became interested in the subject because

of a demonstration of the bacilli while working in Vienna in 1882-1883. Fired with enthusiasm by the new vistas thus opened, he returned to Edinburgh to meet apathy and indifference. “Everybody knew everything that was to be known about tuberculosis. It was a worked-out subject, and the outlook on prevention and treatment was correspondingly hopeless.” A desire to establish a center for the collection, grouping and observation of cases at various stages of the disease led to the establishment in 1887 of the first tuberculosis clinic, the Victoria Hospital for Consumption. His first report on the prevention and cure of the disease before the British Medical Association in 1896 was deemed of so little significance that mention of it was omitted from the printed transactions. In 1890 he advocated compulsory notification of active cases; a fundamental step in the control of the disease which was not enacted into law until 1912. In 1928 Professor Philip was awarded the Trudeau Medal of the National Tuberculosis Association, the first foreigner to be so honored. To those interested in the subject of tuberculosis, the essays provide a delightfully written historical retrospect.

Weiteres über Geschwülste. Von K. A. Helberg. Paper. Price, 2.50 Danish kroner. Pp. 56, with 19 illustrations. Copenhagen: Levin & Munksgaard; Leipzig: Georg Thieme, 1938.

This booklet contains six brief discussions on certain points, mainly morphologic, connected with basal cell carcinoma of the skin; nevi, nevocarcinoma, carcinoids; hemangioma, telangiectatic granuloma and Kaposi's sarcoma; the thyroid; lymphogranulomatosis, and the cellular and nuclear dimensions in carcinoma. Clinical diagnosis and treatment are not considered.

Pseudocyesis. By George Davis Bivin, Ph.D., and M. Pauline Klinger, M.A. A Monograph of the George Davis Bivin Foundation. Cloth. Price, \$4. Pp. 265, with 5 illustrations. Bloomington, Indiana: The Principia Press, Inc., 1937.

Neither of the authors of this book is a physician. Bivin was a psychologist interested primarily in abnormal psychology who established the Medical-Psychology Research Institute, now called the George Davis Bivin Foundation, Inc., associated with the Indiana University. Apparently spurious pregnancy has been recognized since the earliest times, and it is reported that the hippocratic volumes showed at least twelve cases around 300 B. C. The famous cases include, for example, the one of Mary Tudor, queen of England. The authors have collected records of cases throughout the world, many of them not only interesting scientifically but also having extraordinary elements of humor. It is interesting that the work should have been prepared without medical consultation, since the aspects of these cases are as much medical as psychologic. In the concluding pages the evidence of similar cases among cats, cows and dogs is offered.

Malnutrition: The Medical Octopus. By John Preston Sutherland, M.D., Sc.D. Cloth. Price, \$3. Pp. 368. Boston: Meador Publishing Company, 1937.

This book is not worth the serious consideration of the medical profession. The author explains that it was written in answer to the questions “Why do I eat?” and “What shall I eat?” The explanation covers 368 pages. One of these pages, near the end of the book, contains a summary of some of the inaccuracies and curious bits of misinformation, which in one way or another the book provides in abundance, under the heading “Fundamental Prohibitions.” These include “Do not eat white flour in any form whatever” and “do not eat cane or beet sugar in or on anything.” The author specifically admonishes the reader not to eat cream of wheat, polished rice, cakes, pies, puddings, ice cream, pared potatoes in any form, or the majority of cereal breakfast foods. These blanket prohibitions are just as ridiculous as the author's belief that cow's milk is not entirely suitable as a food for human beings and that “its free use probably is more injurious than beneficial to mankind.” The jacket of the book contains laudatory comments by Dr. Percy R. Howe, Sir W. Arbuthnot Lane, Senator Royal S. Copland and others. The comments do not indicate whether these individuals eat their potatoes with the skins on or whether they believe with the author that nuts may be taken freely and in any variety.

Essentials of Prescription Writing. By Cary Eggleston, M.D., Assistant Professor of Clinical Medicine, Cornell University Medical College, New York City. Sixth edition. Cloth. Price, \$1.50. Pp. 155. Philadelphia & London: W. B. Saunders Company, 1938.

In his preface the author speaks of the revision having become necessary by the eleventh edition of the U. S. Pharmacopeia and the sixth edition of the National Formulary. The author has seen fit to omit iso-alcoholic elixir, which by many is considered an important addition to the group of vehicles. Syrup of cherry, which is official in the National Formulary, is spoken of as being nonofficial. Such and similar minor inaccuracies are rather regrettable in a book the avowed purpose of which is to teach correct prescription writing. Otherwise the booklet meets the requirements well. It stresses prescription writing in Latin.

Die tierischen Parasiten des Menschen. Von Dr. Walter Stempel, Hon.-Professor der Zoologie, vergleichenden Anatomie und vergleichenden Physiologie an der Westfälischen Wilhelms-Universität zu Münster i. W. Paper. Price, 12 marks. Pp. 226, with 219 illustrations. Jena: Gustav Fischer, 1938.

Because there has existed in the German language no short and practical publication on the animal parasites, the author has prepared this volume. It is intended as a ready reference for the physician rather than the parasitologist, containing brief paragraphs about the various animal parasites that infest man. The less significant forms are described in fine print, while those of greater medical importance are printed in larger type, together with a certain amount of clinical material. The book is divided into six parts. The first part, of eleven pages, discusses parasitism in general; the main part, of nearly 200 pages, takes up the protozoa, the worms and the arthropods; the third part presents an index to parasites infesting the different parts of the body, such as the muscle, the blood, the skin and the intestinal canal. The remainder of the book is devoted to a chronologic list of literature on parasitology, to a table of corrections for errors that appear in the text, and to the alphabetical index.

Surgical Pathology of the Diseases of the Neck. By Arthur E. Hertzler, M.D., Surgeon to the Agnes Hertzler Memorial Hospital, Halstead, Kansas. Hertzler's Monographs on Surgical Pathology. Cloth. Price, \$5. Pp. 237, with 206 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1937.

This is a fairly brief monograph reflecting the author's experience with various diseases of the neck. He expresses himself freely on controversial subjects but not always with the greatest clarity. Apparently most of the information contained in this monograph is from the author's personal experience and includes chapters on Hodgkin's disease, lymphosarcomas and rare primary tumors of the neck. There is a section of inflammatory lesions of the neck which is too brief and skimpy on such afflictions as actinomycosis. On the difficult problem of metastases to the lymph nodes of the neck, no mention is made of tumor grading according to histology as a guide to further therapy. The author does deplore the failure to make biopsies of lesions treated with irradiation and points to the pitfalls to which this may lead. As can be expected, most of the material presented is such as is seen by the surgeon clinically and grossly rather than actual pathologic tissue after it has left the body.

Manual of Human Dissection. By Edwin M. Shearer, Ph.D., Associate Professor of Anatomy, New York University College of Medicine, New York. Cloth. Price, \$4.25. Pp. 321, with 79 illustrations by the author. Philadelphia: P. Blakiston's Son & Co., Inc., 1937.

This is a good laboratory guide for dissection. It is good because it does not include either a textbook or an atlas and because it leaves out structures of small importance. The time allotted dissection to the curriculum of the ordinary school of medicine in America is less than it once was. It permits thorough dissection and study of only some structures. The student needs guidance in picking out those most worthy of thorough study from the point of view of clinical medicine. This book gives such guidance well and sufficiently. It can be recommended as better than the longer laboratory guides formerly used when the student had a longer time for dissection. The binding is excellent and will stand up in dissecting rooms.

On Deficiency of A Vitamin and Visual Dysadaptation. II. By C. Edmund and Sr. Clemmesen. Paper. Price, 3 kroner. Pp. 52, with 5 illustrations. Copenhagen: Levin & Munksgaard; London: Oxford University Press, 1937.

By the power of distinction method, in which the discriminability of letters of different degrees of contrast is determined at various illuminations, Edmund and Clemmesen examined the adaptation faculty (aptation) of the retina in a group of pregnant medical patients and concluded that the number of cases of dysadaptation in this class of patients had decreased during the past year, probably because of the popular agitation concerning vitamins stirred up by the press and as a result of the vitaminization of margarin. A nine months investigation of a selected group of prisoners in the state prison in Nyborg was done by the same method to determine the adequacy or inadequacy of the prison diet with respect to vitamin A. It was concluded that a diet containing 1,374 international units of vitamin A daily is adequate to obliterate seasonal oscillations in the power of distinction. The ordinary prison diet (1,225 units daily) is insufficient for this purpose and should be supplemented with sweet milk, although rarely does actual dysadaptation occur with this diet.

Pavlov and His School: The Theory of Conditioned Reflexes. By Professor Y. P. Frolov, M.D., Member of the All Union Institute of Experimental Medicine, Moscow. Translated from the Russian by C. P. Dutt, B.A. Cloth. Price, \$4. Pp. 291, with 26 illustrations. New York: Oxford University Press, 1937.

Biographic information, a concise account of the theory of conditioned reflexes, a record of the work of the predecessors of Pavlov on which his studies were based and a description of his methods of work and of his school are offered by this volume. The author, who was a student of Pavlov, first wrote the work in Russian, and the translation is by C. P. Dutt. Out of the years of his study and research, Pavlov summed up the basic qualities of mind indispensable to a scientist. As these were finally formulated they were published posthumously and are certainly worthy of repetition:

What is it that I would wish the young men and women of my country who have dedicated themselves to science?

First of all, consistency. Of this very important condition of fruitful scientific work I can never speak without emotion. Consistency, consistency and again consistency. From the very beginning of your work train yourself to strict consistency in the acquirement of knowledge.

Learn the A B C of science before you attempt to scale its peaks. Never embark on what comes after without having mastered what goes before. Never try to cover up the gaps in your knowledge, even by the holdest guesses and hypotheses. Such a hubbly may delight your eyes by its play of colors, but it will inevitably burst and you will be left with nothing but confusion.

Train yourself to reserve and patience. Learn to do the heavy work that science involves. Study, compare, accumulate facts. Be the wing of a bird never so perfect, it would never bear her aloft without the support of the air. Facts are the scientist's air, without which he would never be able to fly. Without facts, your theories are labor in vain.

But in studying, experimenting and observing try not to remain at the surface of the facts. Do not turn yourself into a museum custodian of facts. Try to penetrate into the secret of their origin. Steadfastly seek the laws that govern them.

The second thing is modesty. Never think that you already know everything. And however high the esteem in which you are held, always have the courage to say to yourself "I am ignorant."

Do not allow pride to take possession of you. It will cause you to be obstinate when you should be conciliatory. It will cause you to reject useful advice and friendly help. It will prevent you from taking an objective view.

In the collective which I have to guide, everything depends on the atmosphere. We are all harnessed to a common cause and each of us helps it forward to the extent of his strength and possibility. With us it is often impossible to distinguish what is "mine" and what is "yours." But our common cause only gains thereby.

The third thing is passion. Remember that science demands a man's whole life. And even if you had two lives, it would not be enough. Science demands from man great intensity and deep passion. Be passionate in your work and searchings.

Our fatherland is opening wide prospects before scientists and—it must be owned—science is being fostered in our country with the utmost lavishment.

What should I say of the position of the young scientist in our country? Is not everything quite clear here? Much is given him, but much is asked of him. For youth, as for us, it is a matter of honor to justify the great trust that our fatherland puts in science.

Among the most interesting of the chapters is that dealing with Pavlov at home. He had a fixed routine of life. He was left handed. His favorite outdoor game was skittles, indoor game solitaire. He relaxed by looking at his collection of pictures or by listening to his favorite airs on the phonograph. He was particularly fond of the writings of Goethe and Shake-

speare, but he spent little time reading outside his field of science. He slept from 1:30 a. m. to 7:30 a. m. as a rule. The final plate in the book is a picture of the great master on the platform at the fifteenth International Congress of Physiologists in August 1935.

Die Operation in der Sprechstunde. Von Dr. Richard Goldhahn, Chefarzt des Kreiskrankenhauses in Liegnitz. Boards. Price, 6.80 marks. Pp. 181, with 68 illustrations. Leipzig: Georg Thieme, 1938.

This small volume contains a great deal of valuable information and guidance in the matter of minor surgical procedures. It would seem, however, that it would more truly be an office surgery if the descriptions of extraction of teeth, tracheotomy and suboccipital puncture had been omitted. The author shows a broad knowledge of the surgical literature, to which frequent references are made. The format is excellent; the illustrations are only average.

Meditatio Medici: A Doctor's Philosophy of Life. By W. Cecil Bosanquet, D.M., F.R.C.P. Cloth. Price, 7s. 6d. Pp. 162. Aldershot: Gale & Polden, Limited, 1937.

On the basis that every man should be his own philosopher, a distinguished physician here presents his own philosophy of life. He comes to the conclusion that the essence of civilization is the equalization of conditions for all members of a community so that those less favored by nature are artificially protected and preserved, and that western civilization tends in many ways to encourage and promote mediocrity and inefficiency rather than strength and ability. As a result, he sees only gradual decline of human vigor among European races. He is convinced that the hope of gaining something for himself and his family is man's chief spur to human action and that any interference with this spur will bring about stagnation. Stagnation invariably involves degeneration. A final paragraph sums up Bosanquet's concept of a well ordered evolution:

Perhaps, then, we may congratulate ourselves on a remnant of sinfulness in our own generation, in whom the love of combat is not quite extinct; for whom absolute social equality for all is not yet established; who have still some prizes to struggle for and some difficulties to overcome. We may even hope that the same opportunities for the display of energy may be afforded to many generations yet of those who come after us. The desire for rest and repose is natural and right, but only after labor. We can all echo the prayer for peace and good fellowship with neighboring nations; but nature knows nothing of peace, only endless conflict and rivalry among living creatures, and her laws are binding on mankind as well as on lower forms. The saying of the old Greek philosopher Heraclitus that "Conflict is the Father of all things" represents the creed of the evolutionist that only by struggle and rivalry—not necessarily by arms and bloodshed, but by emulation at any rate in the arts of commerce, industry and invention—is that progress possible to mankind which is the sole alternative to stagnation, degeneration and decay.

The Evolution of Chronic Rheumatism with Treatment to Correspond. The Preventive Clinic as a First Line of Defence. By R. Fortescue Fox, M.D., F.R.C.P. Founded on a lecture delivered at Margate, at the Congress of The Royal Institute of Public Health and The Institute of Hygiene, May, 1937. Paper. Price, 2s. 6d. Pp. 26, with 5 illustrations. London: H. K. Lewis & Co., Ltd., 1938.

This little pamphlet by one of the most eminent English students of rheumatism enters a brief plea for a broad view on the etiology and treatment of rheumatic diseases. In it appears a brief discussion of certain phases of physical therapy, especially with regard to the advantages of warmth in treatment and the serious dangers of chill and cold. While in no sense a comprehensive report in the field, it reflects some of its distinguished author's views.

Dr. Bodo Otto and the Medical Background of the American Revolution. By James E. Gibson. Cloth. Price, \$4. Pp. 345, with illustrations. Springfield, Illinois, & Baltimore: Charles C. Thomas, 1937.

Dr. Bodo Otto and his family arrived in Philadelphia in 1755. In a German newspaper, two months after the arrival, appeared an announcement as to his qualifications in medicine and offering his services to those who were ill. Dr. Bodo Otto served in the hospitals in connection with the Revolutionary War during the years 1776-1782, between the age of 65 and 72 years. His sons also served during the war, one of them in the double capacity of commander of a New Jersey regiment and as a physician. Around his work and his career, James E. Gibson has drawn a picture of medical service during the Revolutionary War, illustrated with original documents and recounting again the services of Morgan, Benjamin Rush, Shippen and others. Dr. Bodo Otto was in command of the hospital in Philadelphia

located on the square bounded by Eleventh, Twelfth, Spruce and Pine streets. One chapter deals with the famous controversy between Benjamin Rush and Shippen and provides a record of Shippen's trial and acquittal. Dr. Bodo Otto allied himself with Shippen as against Rush and Morgan. At the end of his six years of service he found himself without funds, and he accepted an offer from the Congress of the United States of two years' full pay in lieu of half pay for the rest of his life as a means of settling the obligation of the government to him. There is available a letter which he addressed to the Congress indicating that he had lost his medicine chests and all his utensils during the war. Congress never discharged the obligation to him and the records indicate that Haym Solomon of Philadelphia extended personal assistance to him in lieu of the money owed to him by the government, as he did to many other needy governmental officials. To all physicians interested in the medical side of the Revolutionary War, this volume will be a most interesting contribution.

La atelectasia pulmonar. Por Julio Palacio, profesor adjunto de clínica médica de la Facultad de medicina, y Egidio S. Mazzel, jefe de trabajos prácticos de la Cátedra del Prof. M. R. Castex. Prefacio del Prof. W. Unverricht. Biblioteca argentina de medicina interna, Volumen II. Paper. Pp. 159, with 76 illustrations. Buenos Aires: Aniceto Lopez, 1937.

Pulmonary atelectasis is of great practical importance and has been the subject of many clinical and experimental studies during the last few years. Drs. Palacio and Mazzei have published several articles about the disease. The present book is a complete study of pulmonary atelectasis, especially from a clinical and radiologic point of view. The first chapter deals with the nature of the disease and the evaluation of its knowledge. The second, third and fourth chapters deal with the mechanical and nervous theories of the pathogenesis of pulmonary atelectasis, as well as with the pathologic anatomy, symptoms, diagnosis and clinical forms of the disease. In the remaining chapters the different forms of atelectasis are studied; that is, atelectasis in tuberculosis, collapse therapy, suppurative and cancer of the lung, acute pneumonopathies, hemoptysis, bronchiectasis, spontaneous pneumothorax and postoperative atelectasis. The book is a contribution of value to medical literature. It has many illustrations, some of which are in color, and ends with thirty pages of bibliography.

Practical Chiropody. By E. G. V. Runtig, F.I.S.Ch. Fifth edition. Cloth. Price, \$3. Pp. 200, with illustrations. St. Louis: C. V. Mosby Company, 1937.

This small book discusses inflammatory lesions of the foot, verruca, and lesions of the nails, joints and skin. There are chapters on pads and plaster, therapeutic preparations and compounds, and instruments. It appears to be a satisfactory monograph on the subject of practical chiropody which can be recommended to the chiropodist and others who are interested in this subject. The illustrations are simple and instructive. The author is to be commended for keeping to the subject and not wandering over the human anatomy as has been done by others. He emphasizes the importance of good records.

J. B. Murphy, Stormy Petrel of Surgery. By Loyal Davis, M.D., M.S., Ph.D., Professor of Surgery and Chairman of the Division of Surgery in Northwestern University. Cloth. Price, \$3. Pp. 311, with portrait. New York: G. P. Putnam's Sons, 1938.

More than twenty years has now elapsed since the death of Dr. J. B. Murphy, aptly subtitled in the book by Loyal Davis as the "stormy petrel of surgery." To the rapidly growing body of physicians graduated since 1916, Murphy's controversial but vital figure has emerged in countless tales from the lips of their elders. Dr. Davis, who occupies the chair of surgery at Northwestern University Medical School, held at one time by Murphy, has presented a fascinating account of the manifold activities of probably the best known American surgeon of his age. Constantly in hot water because of the publicity accorded to him (some of it apparently unsought), Murphy's unquestioned ability achieved a professional reputation both in this country and abroad equaled by few and surpassed by none. In general, the sources utilized by Davis were favorable to Murphy in most of his controversies. To this extent, therefore, the biography constitutes an apologia; but in

portions of the book, especially at the end, it is indicated that a substantial basis for at least some of the criticisms of Murphy may not have been wholly lacking. The admiration accorded Murphy as well as the opposition he received is admirably illustrated in the book. Certainly Murphy's successive professorship of surgery in Rush Medical College and in Northwestern University Medical School and his election to the presidency of the American Medical Association constitute ample evidence that, whatever Murphy's personal genius for creating virulent opposition, his ability was far out of the ordinary. The historical importance is reflected in the entire gamut of biography—the obscure origin and rapid rise of the "hero", development of antiseptics and asepsis, the Murphy button, the Haymarket riot, the shooting and care of Theodore Roosevelt, and many other general and medical historical events.

Milk Control. Governmental Regulation of the Dairy Industry in the United States. Prepared by the American Municipal Association. Publication No. 57. Paper. Price, 75 cents. Pp. 49. Chicago, Illinois: Public Administration Service, 1937.

The American Municipal Association in the present pamphlet provides a brief account of some of the activities of federal and local agencies with respect to the regulation of the dairy industry in the United States. In the appendixes there are provided the milk ordinance of the United States Public Health Service and brief abstracts of several other items of interest to those concerned with the public health aspects of milk.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Coroners: Right of Minnesota Coroner to Exhume Body for Inquest.—The deceased died under circumstances indicating that her death was due to violence. A partial autopsy was performed and her body was then buried. The contents of her stomach, removed at the autopsy, were analyzed and the report filed about two weeks after the body had been buried showed the presence of strychnine. About a month after the death, the coroner determined to have a further autopsy made and to hold an inquest. He therefore ordered the exhumation of the body and its production at the inquest. The plaintiff, the surviving spouse, thereupon sought to enjoin the coroner and his assistant from holding the inquest and autopsy. The district court, Dakota County, however, after issuing a temporary restraining order, vacated that order. The plaintiff then appealed to the Supreme Court of Minnesota.

The precise question here presented, said the Supreme Court, is whether or not a coroner has the legal right to exhume a body for the purpose of holding an inquest. Mason's Minnesota Statutes, 1927, section 949, sets forth the oath the coroner must administer to the jurors "in view of the dead body":

"When the jurors appear, the coroner shall call their names, and then, in view of the dead body, administer to them the following oath: 'You do swear that you will diligently inquire, and due presentment make on behalf of the state of Minnesota, when, how, and by what means the person whose body lies before you did come to his death.'"

Section 951 lays down the oath required of witnesses:

You do solemnly swear that the evidence you shall give to this inquest concerning the death of the person lying before you dead shall be the whole truth.

Section 953, relating to the form of the inquisition to be returned by the jury provides:

The jury, upon inspection of the dead body, and after hearing the testimony and making the needful inquiries, shall draw up and deliver to the coroner the inquisition.

No claim is made, said the Supreme Court, that the coroner did not have authority to hold an inquest in this case. It was undisputed that the decedent was supposed to have come to her death by violence. In authorizing a coroner to hold an inquest on a person supposed to have come to his death by violence, the legislature must have recognized that facts leading to a suspicion or appearance of death by violence might not become evident until after the burial of the body. In

requiring the presence of the body at the inquest, the statutes impliedly at least give the coroner authority to exhume the body on which the inquest is to be held. Those statutes do not require the coroner to secure a court order authorizing exhumation. As the time element for exhumation may be of the utmost importance in such proceedings, and delay resulting from litigation, because of the processes of decomposition, might thwart the very purpose for which the exhumation was sought, such authorization for summary action by the coroner seemed to the court to be best.

We do not mean, said the Supreme Court, to hold that coroners may exhume bodies indiscriminately, even for the purpose of holding an inquest. The passage of time or other factors might destroy the evidences of the cause of death so that an inquest would not accomplish its purpose; or sufficient cause for holding an inquest might not appear; or considerations of public health and welfare might make it inadvisable to permit the exhumation of a dead body. In such cases, or in any other case in which a proper showing is made, an injunction to prevent exhumation should and undoubtedly would be issued.

The judgment of the court below vacating its temporary restraining order was affirmed by the Supreme Court.—*Sejrup v. Shepard* (Minn.), 275 N. W. 687.

Malpractice: Bad Result Raises no Presumption of Negligence.—The plaintiff sued Dr. Parker and another physician for malpractice because of a burn allegedly resulting from x-ray treatments prescribed by Dr. Parker. He alleged that he consulted Dr. Parker relative to a tumor in the skin (keloid) behind his right ear and that Dr. Parker directed him to go to a Miss Sykes, whom the plaintiff alleged was an agent of Dr. Parker, in the Pittman Hospital, for x-ray treatments. He had had a growth at the site of the present growth many years before and had had it surgically removed, which left a scar, but it did not "open and close up" until after the x-ray treatment. The plaintiff presented no evidence to show negligence in the administration of the treatment. A physician called by the plaintiff stated that the plaintiff consulted him after the x-ray treatment and then had an "ulcer mastoid" back of his ear, which the witness considered chronic. At the conclusion of the plaintiff's testimony, the court entered a judgment for the defendants and he appealed to the Supreme Court of North Carolina.

The general rule is, said the Supreme Court, that in malpractice actions no presumption of negligence arises from an error of judgment in the diagnosis or the treatment prescribed by a physician, or in failure to effect a remedy or accomplish as good results as some one else might have done. A physician as good results as some one else might have done. A physician is neither a warrantor of cures nor an insurer. There was not sufficient evidence, therefore, to take the case to the jury. Taking the history of the patient's trouble and the testimony of the physician who was called on his behalf, the court could see no substantial injury, if any at all, caused by the x-ray operator, even granting that she was the agent of the defendant Parker. In the opinion of the court, there was no sufficient probative evidence that the plaintiff's condition was caused by the x-ray treatment complained of. Evidence, to be submitted to the jury, must be more than conjectural or speculative and must be such as will support a finding by the jury that there was negligence. The judgment in favor of the physician was accordingly affirmed.—*Davis v. Pittman* (N. C.), 194 S. E. 97.

Society Proceedings

COMING MEETINGS

National Medical Association, Hampton, Va., Aug. 15-19. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
Oregon State Medical Society, Timberline Lodge, Aug. 24-27. Dr. Morris L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
West Virginia State Medical Association, White Sulphur Springs, July 11-13. Mr. Joe W. Savage, Public Library Building, Charleston, Executive Secretary.
Wyoming State Medical Society, Laramie, Aug. 7-9. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

7: 397-440 (May) 1938

- Some Thoughts on the Medical Profession. R. S. Hill, Montgomery.—p. 397.
Relation of Public Welfare and Industrial Development to Public Health and Medical Education in Alabama. S. Graves, University.—p. 402.
Treatment of Tetanus: Analysis of Thirty-Six Cases. E. G. Givhan Jr. and T. S. Boozer, Birmingham.—p. 407.
The Undulant Fever Problem: A New and Promising Idea as to Treatment of the Chronic Case. E. Thames, Mobile.—p. 411.
Some Things About the Eye of Interest to the General Physician. F. H. Clements, Birmingham.—p. 416.

American J. Obstetrics and Gynecology, St. Louis

35: 743-924 (May) 1938. Partial Index

- Comparative Study of Posterior Pituitary Extract Administered at the Onset of and After Completion of Third Stage of Labor. F. F. Fortin, Chicago.—p. 761.
*Elderly Primiparas: Study of 240 Cases. C. R. Tew, Raleigh, N. C., and K. Kuder, New York.—p. 773.
Pneumococcal Infection of Genital Tract in Women, Especially During Pregnancy and the Puerperium. H. H. Nuckols and A. T. Hertig, Boston.—p. 782.
*Experimental Study of Acidosis and Alkalosis in Labor. W. T. Pride, J. R. Reinberger and D. T. Holland, Memphis, Tenn.—p. 793.
Weight Changes in Pregnancy. P. N. Bray, Duluth, Minn.—p. 802.
Wheat Germ Oil Therapy: III. Rat Experiments, Lactation, Clinical Uses, "Failures" and Effect on Congenital Anomalies. E. Shute, London, Ont., Canada.—p. 810.
Epilepsy and Pregnancy: Review of Literature and Study of Thirty-Seven Cases. A. Baptisti Jr., Baltimore.—p. 818.
Uterine Motility Resulting from Inflammatory Processes in Myometrium, in Absence of Ovarian Hormones. M. W. Laufer and S. R. M. Reynolds, Brooklyn.—p. 825.
Blood Loss in Menorrhagia. Adelaide P. Barer and W. M. Fowler, Iowa City.—p. 839.
Amplification of Fetal Heart Sounds. W. T. Pommerenke and F. W. Bishop, Rochester, N. Y.—p. 851.
Correlation Between Blood Pressure and Nembutal Dosage in Toxemias of Late Pregnancy. J. W. Ross, Washington, D. C.—p. 855.
Clinical Experiences with Ergonovine. J. I. Kushner and P. B. Wahrsinger, New York.—p. 859.
The Management of Pregnancy and Labor Complicated by Triplets. J. C. Hirst, Philadelphia.—p. 868.
Hyperplasia in Epithelium of Uterine Tubes. E. Allen, New Haven, Conn.—p. 873.
Tubal Pregnancy: Analysis of 445 Cases. P. Graffagnino, L. Seyler and M. M. Bannermann, New Orleans.—p. 875.
Pyelitis of Pregnancy Due to Bacillus Dysentery Flexner. H. L. Stewart, Detroit.—p. 887.

Elderly Primiparas.—From Sept. 1, 1932, to March 31, 1937, there occurred in the clinic service 11,919 deliveries with the birth of 12,059 infants. Tew and Kuder found that in this number there were 240 patients who were in the elderly (35 or more years of age) primipara group, an incidence of 2.01 per cent. Among these elderly primiparas there was an increased incidence of toxemia of pregnancy, placenta praevia and myoma uteri. Although there was no marked difference in the total incidence of all types of contracted pelvis, funnel pelvis were definitely more predominant than among the younger primiparas. Among the complications of labor in the elderly primiparas, an increased incidence of occipitoposterior positions, arrested transverse positions and postpartum hemorrhage was observed. The head of the child was unengaged at term in 53.3 per cent of elderly primiparas, as compared with only 20.9 per cent in a control series of patients. The incidence of operative delivery was greatly increased in the elderly primiparas, being double that of the clinic population. Maternal mortality was definitely higher in the elderly primiparas. Infantile mortality, which includes deaths of premature, full-term and neonatal infants, was markedly elevated in the case of elderly primiparas, being almost three times that of the clinic population. The

elderly primipara does not seem to be able to undergo operative procedures at delivery with as good results to herself as does the younger woman, as shown by the complications of the puerperium. Cesarean section is not indicated in the elderly primipara unless there is an accompanying complication, which still further adds to the risk to the offspring.

Acidosis and Alkalosis in Labor.—In an attempt to explain the common occurrence of acidosis Pride and his associates determined the blood carbon dioxide of 157 patients during normal labor. Dehydration and starvation acidosis was eliminated by proper fluids and food. The urine of these patients did not show the presence of acetone and diacetic acid. There was a constant lowering of the blood carbon dioxide as labor progressed, which reached the lowest point at the end of the second stage with recovery to normal immediately following delivery. This is in accord with most observations. The degree of acidosis was always in direct ratio to the hours and character of labor. This increasing acidosis was assumed to be the accumulation of lactic acid resulting from increased muscular activities. Since the presence of diacetic acid and acetone in the urine due to dehydration and starvation and the acidosis evidenced by blood carbon dioxide was found to be in direct ratio to muscular activity the effect of various sedatives was studied. Sodium amytal in eight cases had little effect on the blood carbon dioxide. Three cases showed an average increase of 12.3 per cent of its volume after its administration, while five cases showed a decrease of 11.4 per cent. This indicates that sodium amytal in moderate doses does not produce sufficient analgesia to limit muscular activity. In a few selected cases scopolamine was given in conjunction with sodium amytal. There was a definite rise in the blood carbon dioxide. By increasing pulmonary ventilation scopolamine proved of some value, mainly because it always intensified the sedation, consequently reducing muscular activity. Sodium bicarbonate by mouth was given in a few cases with sodium amytal and scopolamine. The carbon dioxide was elevated from 4 to 24 per cent of its volume, indicating its value as an adjunct with analgesic medication. The correction of physiologic acidosis was attempted by the administration of sodium bicarbonate in 60 Gm. doses by mouth at hourly intervals. There was a definite return of the carbon dioxide to normal in ratio to the amount of sodium bicarbonate ingested. Experimental acidosis was produced in dogs by the administration of intravenous lactic acid and experimental alkalosis by the intravenous administration of sodium bicarbonate. Severe acidosis in the dog was corrected by a 2 per cent solution of sodium bicarbonate without ill effects. Experimental alkalosis in the dog was corrected by a 1 per cent solution of lactic acid. The experimental correction of alkalosis and acidosis in the dog bids to be a valuable adjunct in resuscitating exhausted patients in labor, which conditions have frequently heretofore been fatal.

American Review of Tuberculosis, New York

37: 465-578 (May) 1938

- *Incidence of Extrapulmonary Primary Tuberculosis. H. C. Sweany and W. L. M. Martinsen, Chicago.—p. 465.
Studies on Retrogressive Changes of Tubercles. H. C. Sweany, Alma E. Tillotson and V. Kozielek, Chicago.—p. 484.
Tuberculous Dissemination During Therapeutic Pneumothorax: Study of Three Cases. W. A. Zavod, Valhalla, N. Y.—p. 494.
Tuberculous Bacillema in Rabbits: I. Bacillema in Nonallergic Animals. J. P. Duchaine, Philadelphia.—p. 507.
Id.: II. Bacillema in Allergic Animals. J. P. Duchaine, Philadelphia.—p. 520.
Flotation Method of Sputum Examination. C. R. Smith, Los Angeles.—p. 525.
Clinical versus the Public Health Point of View in Treatment of Tuberculosis. F. M. Pottenger, Monrovia, Calif.—p. 533.
*Positive Intrapleural Pressure as an Aid to Pneumothorax Therapy. G. Edsall, Cambridge, Mass.—p. 542.
*Tuberculous Infection in Negro Colleges. P. B. Cornely and E. H. Allen, Washington, D. C.—p. 549.
Study of Results of Treatment of Pulmonary Tuberculosis in Mexican and White Patients. F. R. Harper, Tucson, Ariz.—p. 556.
Tuberculosis Survey in Jamaica. E. W. Flahiff, Kingston, Jamaica, British West Indies.—p. 560.

Extrapulmonary Primary Tuberculosis.—In addition to studying the primary pleural foci, which differ between workers, Sweany and Martinsen analyzed 132 cases of extrapulmonary primary tuberculosis to see whether an infection percentage of the important areas of the body could be estab-

lished for their community. There were 73.5 per cent primary infections involving only the lungs and hilar lymph nodes. There were 79 per cent when the cases with multiple ports of entry were added. There were 8.3 per cent isolated gastrointestinal infections and 12.9 per cent if the cases having multiple ports of entry were considered. There were 1.8 per cent isolated cervical or "head" primaries, which amounted to 4.5 per cent when the cases in which there were multiple ports of entry were added. There were three cases (2.3 per cent) of "pleural" primaries, three cases of "cryptic" lesions in the liver or lymph nodes with no demonstrable local lesion, three doubtful cases and seven (5.3 per cent) in which no calcifications were found. The percentage of cases showing primary hematogenous calcifications in the liver and spleen was 30.6.

Positive Intrapleural Pressure in Pneumothorax.—Since no detailed studies on positive pressure were to be found in the literature, Edsall made an analysis of the pneumothorax treatments administered at Trudeau Sanatorium during the years 1929 to 1933 inclusive. From a total of about 275 patients receiving pneumothorax, sixty-eight were found in whom, at some time during their stay, intrapleural pressures above zero on inspiration had been recorded. All cases were considered in which the pressure had remained positive throughout the respiratory cycle for more than occasional refills. Of the sixty-eight cases, forty-three remained in which positive pressures were induced to a significant degree and sustained over several refills, but in only thirty of the cases were there data adequate for comparing the effects of normal versus positive pressure. In these thirty cases the treatment was applied after a control period on normal pressure. Positive pressure was usually employed to improve a collapse rendered inadequate under normal pressures because of pleural adhesions. In fifteen cases positive pressure produced an increase in collapse of more than 15 per cent; the average increase in the thirty cases was 17 per cent. The increase obtained was not consistently related to the pressure employed. In thirteen cases, healing of cavities under both types of pressure could be compared. Ten cases showed accelerated healing while under positive pressure. In seventeen cases with previously unimproved Gaffky counts, induction of positive pressure was followed within two months by a negative sputum in two cases and a lowered Gaffky count in seven other cases. General results following positive pressure were definitely good in fourteen of the thirty cases and possibly beneficial in seven others. Complications possibly related to the use of positive pressure occurred in four cases. In the thirteen cases in which the effects of pressure were not comparable, two major complications occurred subsequent to the induction of positive pressure. The judicious and careful application of moderate positive pressure is a worth while procedure in selected cases in which simple pneumothorax has failed to produce satisfactory collapse and healing of the lung.

Tuberculosis in Negro Colleges.—In order to determine the extent of tuberculosis case-finding programs in Negro colleges in the South, Cornely and Allen sent questionnaires to 104 collegiate institutions requesting information on the extent and results of tuberculin testing of their students for the school years 1933-1934 through 1936-1937. Thirty-five institutions with an enrolment of 14,162 students, approximately 50 per cent of the total attendance in Negro colleges in the United States, responded. Only one institution has done tuberculin testing on entering students for three consecutive years; two have done it for two years, while three began this practice during the past school year. Based on information from the questionnaires, of 3,542 students in eleven institutions tested during three years, 33.9 per cent gave a positive reaction. The incidence of reactors varied from one institution to another and in the same school from one year to the other. In the summer of 1935 the National Tuberculosis Association made available purified protein derivative tuberculin free of charge to those Negro colleges and universities which were willing to carry out complete tests and to send their results to the association for compilation. Eight Negro colleges took advantage of this offer. Of the 2,040 students tested, the percentage of positive reactors of all ages was 39.1. Reactors gradually increase with age. The percentage of positive reactors was

44 for the male and 35.4 for the female. This is true for practically each year considered. This disparity between the sexes has already been noted in white students, but the inequality seems even greater in the Negro.

Anatomical Record, Philadelphia

70: 505-664 (April) 1938

- First Contractions of the Heart in Rat Embryos. C. M. Goss, New York.—p. 505.
- Left Superior Vena Cava Without Corresponding Vessel on Right Side: Case. W. J. Atwell and P. Zoltowski, Buffalo.—p. 525.
- *Effect of Male Hormone on Descent of Testes. J. B. Hamilton, Albany, N. Y.—p. 533.
- Golgi Apparatus of Cells of Adrenal Cortex After Hypophysectomy and on Administration of Adrenocorticotrophic Hormone. J. D. Reese and H. D. Moon, Berkeley, Calif.—p. 543.
- Review of Golgi Apparatus: Part II. H. Kirkman, Palo Alto, Calif., and Aura E. Severinghaus, New York.—p. 557.
- Embryonic Development of Respiratory Portion of Pig's Lung. L. P. Clements, Omaha.—p. 575.
- Conjoined Twins and Triplets in Trout. W. G. Lynn, Baltimore.—p. 597.
- Cytologic Relationship Between Hypophysis and Germinal Epithelium of Testis. A. J. Gatz, Northfield, Minn.—p. 619.
- Homology of Vesicular Ovarian Follicles of Mammalian Ovary with Coelom. H. W. Mossman, Madison, Wis.—p. 643.

Male Hormone and Descent of Testes.—Hamilton has seen cryptorchid testes of the immature macaque descend into the scrotum following adequate administration of testosterone acetate and testosterone propionate. There was less edema and scrotal swelling than in descent produced by gonadotropic substance. Processes considered largely responsible in the production of this descent are (1) growth and elongation of the elements of the cord and (2) slight development of the scrotum to form more of a pouch for the testes. Descent produced by anterior pituitary-like substances may be due in part to stimulation of the secretion of male hormone. Endocrine treatment may be of value in (1) producing descent in certain cryptorchid cases, (2) authorizing surgery at an early age instead of waiting until puberty to see whether spontaneous descent may occur and (3) aiding surgery preoperatively by the development of structures of the cord and postoperatively by preventing retraction and tension.

Annals of Surgery, Philadelphia

107: 641-880 (May) 1938. Partial Index

- Aneurysms of Circle of Willis: Discussion of Dr. Dandy's Intracranial Occlusion of Internal Carotid for Aneurysms of Circle of Willis, with Supplementary Remarks. R. Matas, New Orleans.—p. 660.
- Brain Abscess Due to Gas-Forming, Spore-Bearing Anaerobes: Report of Two Cases, with Recovery. C. Bagley Jr., Baltimore.—p. 681.
- Use of Fascia and Ribbon Catgut in Repair of Cleft Palate and Harelip. A. G. Brenizer, Charlotte, N. C.—p. 692.
- Tracheo-Esophageal Fistula: Description of New Operative Procedure and Case Report. H. A. Gamble, Greenville, Miss.—p. 701.
- Scalenus Neurocirculatory Compression. R. G. Spurling and F. K. Bradford, Louisville, Ky.—p. 708.
- *Carcinoma of the Breast in the Negro. I. Cohn, New Orleans.—p. 716.
- *Simple Treatment for Empyema in Children. B. C. Willis, Rocky Mount, N. C.—p. 739.
- Thoracoplasty in Treatment of Pulmonary Tuberculosis. L. W. Frank and P. Turner, Louisville, Ky.—p. 745.
- *Lung Abscess: Analysis of Causes of Death in 100 Consecutive Fatal Cases. J. D. Rives, R. C. Major and S. A. Romano, New Orleans.—p. 753.
- Carcinoma of Stomach, with Special Reference to Total Gastrectomy. A. W. Allen, Boston.—p. 770.
- Diverticula of the Jejunum. J. C. A. Gerster, New York.—p. 783.
- Complicating Effects of Diverticulitis of Colon on Abdominal Surgery and Especially on Surgery of the Large Bowel. V. C. David and R. K. Gilchrist, Chicago.—p. 801.
- Surgical Treatment of Intractable, Chronic Ulcerative Colitis. H. W. Cave, New York.—p. 806.
- Simple Method of Constructing a Vagina: Report of Four Cases. L. R. Wharton, Baltimore.—p. 842.
- Posterior Vaginal Hernia. W. T. Black, Memphis, Tenn.—p. 855.
- Vaginal Cysts, with Special Reference to Those of Gartner's Duct. R. L. Sanders, Memphis, Tenn.—p. 863.

Carcinoma of Breast in Negro.—Cohn states that during the period from 1932 to 1936 inclusive 481 persons with carcinoma of the breast were admitted to the Charity Hospital. Of these, 256 were Negroes and 225 were white. The per thousand cancer of the breast admissions (Negro) to the total admissions has remained constant, 1.7 per cent for the period under study. More nulliparous Negro than white women have presented themselves with cancer of the breast. The age of the Negro patient averages about 4.7 years younger than the

age of the white patient. The greatest number of cases are in the decade between 40 and 50 years of age in the Negro and between 50 and 60 in the white patient. Metastases in the axillary lymph nodes were present in 60 per cent on admission. Of 224 cases in which the records were adequate for study, only 118 were considered suitable for radical operation. No operation was indicated in twenty-seven cases. These facts further indicate the late period in which the Negro patients present themselves. The percentage of known dead following radical operation is 46. If those cases are added which could not be traced, the percentage dying within from one to five years would be well above 65. Of the 224 patients with carcinoma of the breast considered in this series, probably 75 per cent are dead in from one to four years after their admission to the Charity Hospital. Only 74 per cent of the Negro patients had x-ray investigation preoperatively. Therefore the percentage of skeletal metastases could not be estimated accurately. Irradiation either with roentgen rays or with radium was not the method of choice in any of the operable cases. These data are a challenge to the profession to continue its efforts to educate the public. End results can be improved by methods other than studies of etiology.

Empyema in Children.—Willis observed 104 consecutive cases of empyema in children less than 13 years of age from Oct. 15, 1915, to Oct. 15, 1937. He believes that the punch operation carries a lower mortality if the cavities are kept clean and the general health is improved. It is more difficult to treat these patients by this method than by rib resection and open drainage; but lower mortality, freedom from postural changes, unsightly scar and pus soaked dressings are the compensations. Since the disease rarely occurs as a primary lesion, a careful history must be obtained, especial attention being paid to the possibility of antecedent pneumonia. There was a history suggestive of a bronchopneumonia or lobar pneumonia in 103 cases. Fluoroscopic examinations before and after operation are most important, the former to detect the disease and its extent, the latter to watch the progress of the treatment. Whenever pus is found in the pleural cavity, without the presence of pneumonia, it should be drained through a small rubber tube by the closed method. A rib resection, certainly in the synpneumonic stage, is in the author's opinion dangerous surgery and often the cause of death. The thoracic punch operation is a simple procedure attended with practically no shock. The field is first painted with iodine; a point is selected, usually the eighth or tenth interspace, in the posterior axillary or scapular line, unless there is a localized pocket. The skin is infiltrated for three fourths of an inch, down to the pleura, the needle is changed for a larger one and introduced into the pleural cavity, pus is aspirated, the syringe is disconnected and a half inch incision is made through the skin and deep fascia beside the needle in the line of the intercostal space. The trocar is introduced directly into the pleural cavity so as not to injure the diaphragm. The obturator is pulled out and fairly rigid special tubing about 5 mm. in gross diameter with a lumen of 3 mm. is introduced. It should be twice the length of the cannula and fit snugly and it should reach well beyond the walling-off process of the cavity. The tubing should be rigid enough not to collapse when suction is made with the syringe. If the child is not too ill the pus can be evacuated while the cannula is in position. If there is a large accumulation, the pus should be removed at intervals in order not to reduce the intrathoracic tension too rapidly. Coughing is an indication to stop. The cannula is withdrawn somewhat. An air-tight dressing, consisting of 3 square inches of rubber tissue with a hole in the center, is applied over the tube down to the wall of the chest. The sides of the rubber tissue are then sealed to the wall of the chest with adhesive tape. The tube is doubled on itself and tied off so that the intrathoracic pressure may be reduced gradually by evacuating small amounts of pus at intervals. Irrigations with solution of sodium hypochlorite are employed after operation, when there are many plugs, but not until at least two days or more has elapsed, depending on the general condition of the child. The tube is shortened according to the capacity of the cavity and the fluoroscopic observations. It is removed only when the cavity holds less than 2 cc. and the chest is fluoroscopically negative for any further collections of pus. If the tube is removed

before the cavity is obliterated, though thought to be sterile, there will be a high percentage of recurrence and chronic empyema may result. Postoperative treatment consisting of various chest exercises and general supportive measures should be prescribed and carried out. Rib resection in children should be abandoned except in rare cases and then only after aspiration or thoracotomy has been tried. Rib resections were performed in sixteen of the 104 cases and in eighty-eight the procedure was the trocar-punch operation. In only one child was complete collapse of the lung noted. The average stay in the hospital was 22.5 days. There were five deaths; two occurred in four children less than 1 year of age, two in seventeen children between 1 and 2 years of age and one in a group of thirty-one children from 3 to 5 years of age. There were no deaths in the forty-three children from 6 to 10 and the nine from 11 to 13 years of age.

Lung Abscess.—Rives and his colleagues determined the causes of death in 100 consecutive fatal cases of nontuberculous abscess of the lung, exclusive of any due to tumors, foreign bodies or bronchiectasis. The duration of the disease before treatment, the extent and severity of the infection and the methods of treatment employed were not the primary contributing causes of death. Three more or less controllable factors contribute, in an important degree, to the mortality. They are spreading pneumonitis, empyema and anemia. Anemia may be readily controlled by transfusion and by adequate supportive treatment. Empyema may be avoided in most instances if surgical treatment is instituted early in superficial lesions and if needling of the chest is abandoned. Spreading pneumonitis, the chief cause of death, may be minimized if the following are avoided: attempts to drain the abscessed cavity during the acute stage; compression therapy, especially when the cavity is incompletely drained; all measures such as intermittent postural drainage likely to cause severe paroxysms of coughing while the cavity is full, and surgical drainage in the acute stage and at any time in deep seated abscesses. Approximately half of the deaths were probably not preventable, but in many of the remaining fatal cases the fatality might have been avoided by adequate supportive treatment combined with the judicious use of commonplace methods of bronchial or external surgical drainage. Spreading pneumonitis was the cause of death in four fifths of the fatal cases. The best results will be attained by an orderly plan of treatment which utilizes supportive measures, bronchial drainage and surgical drainage according to their proper indications, and which is continued until the abscess has disappeared completely.

Archives of Dermatology and Syphilology Chicago

37: 737-936 (May) 1938

Early Epidermal Neoplasia: Description and Interpretation: Theory of Mutation in Origin of Cancer. R. L. Sutton Jr., Kansas City, Mo.—p. 737.

Henry Granger Piffard: Great Factor in Progress of American Dermatology. P. E. Bechet, New York.—p. 781.

Aplastic Anemia Following Use of Nearsphenamine. M. Kadin, Calumet, Mich.—p. 787.

*Treatment of Chronic Dermatitis by Cataphoretic Method. F. P. Lowenfish, New York.—p. 797.

Syphilitic Asthma with Atrophic Cirrhosis in Acquired Syphilis: Report of Case. E. W. Klinefelter, York, Pa.—p. 805.

Scleredema Adulorum (Buschke): Its Relation to Trophedema and Its Pathogenesis. M. Helfand, New York.—p. 809.

Syndrome of Spoon Nails, Anemia, Cheilitis and Dysphagia. N. P. Anderson, Los Angeles.—p. 816.

Cutaneous Manifestations of Trichophyton Purpureum (Bang). G. M. Lewis, R. M. Montgomery and Mary E. Hopper, New York.—p. 823.

Treatment of Dermatitis by Cataphoresis.—Lowenfish treated twenty cases of chronic occupational dermatitis, ten cases of dermatophytosis and nine cases of moniliasis by cataphoresis with tap water. In the first twenty cases the rapidity of response was striking. In most cases itching was relieved and the appearance much improved after one or two treatments. Clearing up the last traces of the eruption required a longer time, but in all twenty cases the skin became practically normal. Two patients experienced relapse while under observation, but the condition again cleared after two or three treatments. In the ten cases of dermatophytosis and the nine of moniliasis in which the diagnosis was established by microscopic and cultural examination, from two to ninety-one treatments by cataphoresis were given, but the method was of no

value. Ten of the cases of chronic dermatitis of the hands and feet were followed after treatment was stopped and the eruptions disappeared and they have not recurred in six after a follow-up period of from one month to two years. No explanation can be offered as to why this treatment was beneficial.

Archives of Internal Medicine, Chicago

61: 693-846 (May) 1938

- Arachnodactyly and Its Medical Complications. P. H. Fitcher and H. Southworth, Baltimore.—p. 693.
The Heart in Acromegaly. C. Courville and V. R. Mason, Los Angeles.—p. 704.
*Cholesterol Content of Blood in Heart Disease. C. A. Poindexter and M. Bruger, New York.—p. 714.
Clinical Studies of Respiration: VI. Expiratory Inflation During Air Hunger and Dyspnea Produced by Physical Exertion in Normal Subjects and in Patients with Heart Disease. J. A. Greene and L. W. Swanson, Iowa City.—p. 720.
Direct Measurement of Height of Thyroid Epithelium: Method of Assay of Thyrotropic Substance; Clinical Application. R. W. Rawson and P. Starr, Chicago.—p. 726.
*External Secretory Function of Human Pancreas: Physiologic Observations. J. M. McCaughan, B. L. Sinner and C. J. Sullivan, St. Louis.—p. 739.
Lipopenia Associated with Cholesterol Estersturz in Parenchymatous Hepatic Disease. E. M. Boyd and W. F. Connell, Kingston, Ont., Canada.—p. 755.
Studies on Porphyria: III. Acute Idiopathic Porphyria. W. J. Turner, North Little Rock, Ark.—p. 762.
Gastric Secretion in Man: Observations on Effects of Repeated Injections of Histamine and on Transient Achlorhydria. L. Schiff, with technical assistance of Catherine Dorrman and Toba Tahl, Cincinnati.—p. 774.
Calcific Aortic Stenosis: Clinical and Electrocardiographic Study. L. H. Berk and M. Dinnerstein, New York.—p. 781.
Ossous Form of Gaucher's Disease: Report of Case. S. Melamed, New York, and W. Chester, Mamaroneck, N. Y.—p. 798.
Diseases of the Heart: Review of Significant Contributions Made During 1937. A. Graybiel, with editorial assistance of P. D. White, Boston.—p. 808.

Blood Cholesterol in Heart Disease.—Poindexter and Bruger determined the cholesterol content of the blood in sixty-one patients with cardiac disease; eighteen had rheumatic heart disease, twenty-four had arteriosclerotic heart disease and nineteen had hypertensive heart disease. Thirty-three normal subjects were used for a comparative study. It was observed that whereas 28 per cent of the patients with rheumatic heart disease had blood cholesterol values below 150 mg. per hundred cubic centimeters, not one of the patients with either arteriosclerotic or hypertensive heart disease exhibited a similar hypocholesteremia. Only 5 per cent of the patients with rheumatic heart disease showed a concentration of cholesterol in the blood over 250 mg. per hundred cubic centimeters, approximately 45 per cent of the patients with either arteriosclerotic or hypertensive heart disease demonstrated this hypercholesteremia. Little or no difference could be observed as to the distribution of the blood cholesterol values when the patients with arteriosclerotic and those with hypertensive heart disease were compared. The cholesterol content of the plasma tended to be low in rheumatic heart disease and elevated in arteriosclerotic or hypertensive heart disease. The results for the group with rheumatic heart disease were not significant since the difference between the means for the group of normal subjects and those for the group with rheumatic heart disease divided by the standard error of the difference of these means gave a value of only 1.03. However, when the same calculations were employed for the patients with arteriosclerotic and those with hypertensive heart disease the results were 4.9 and 4.29, respectively. No appreciable difference was observed in the ratios of ester to free cholesterol in the three types of heart disease considered.

External Secretion of Pancreas.—McCaughan and his associates made physiologic observations on the external secretory function of the human pancreas on a patient in whom a pancreatic fistula developed after a second Billroth type of gastric resection. The fistula was later successfully transplanted to the anterior wall of the stomach. Preceding the operation the effect on the rate of secretion and on the total base was determined before and after the administration of various drugs and foodstuffs. The volume of pancreatic juice secreted in twenty-four hours was estimated at 600 cc. A rise in secretory rate followed the administration of secretin, a mixed meal,

water, hydrochloric acid, beef broth, dextrose, olive oil, peptone, coffee, mecholyl and physostigmine. A fall in the secretory rate occurred after sodium bicarbonate, bile salts, magnesium sulfate, atropine, epinephrine and histamine. The total base was elevated after the administration of secretin, sodium bicarbonate and coffee and was depressed after the administration of a mixed meal, beef broth, dextrose, bile salts, physostigmine, epinephrine and histamine. There was no significant change in total base after the exhibition of hydrochloric acid, peptone and magnesium sulfate.

Archives of Ophthalmology, Chicago

19: 663-866 (May) 1938

- Anomalous Projection and Other Visual Phenomena Associated with Strabismus. F. H. Verhoeff, Boston.—p. 663.
Cancer of the Eyelids: I. Basal Cell and Mixed Basal Cell and Squamous Cell Epithelioma. H. L. Birge, Rochester, Minn.—p. 700.
Superficial Punctate Keratitis: Its Treatment with Iodine Solutions. A. Cowan and T. H. Cowan, Philadelphia.—p. 709.
Avertin Anesthesia for Ophthalmic Operations. J. Laval, New York.—p. 714.
*Net Average Yearly Changes in Refraction of Atropinized Eyes from Birth to Beyond Middle Life. E. V. L. Brown, Chicago.—p. 719.
Molded Contact Lenses. T. E. Obrig, New York.—p. 735.
Strength of Epinephrine Compounds in Ophthalmotherapy: New Epinephrine Ointment. J. D. Weintraub, Cincinnati.—p. 759.
Fever Therapy for Ocular Diseases. J. S. McGavic, Cincinnati.—p. 769.

Changes in Refraction of Atropinized Eyes.—In an attempt to determine the net average yearly changes in static refraction in atropinized eyes from birth to the end of the fifty-first year, Brown made 8,820 observations and computed the changes in the refraction of one or both eyes of 1,203 persons (611 clinic patients and 592 patients from private practice). From birth to the end of the seventh year hyperopia increased (refraction decreased, average 0.18 diopter) in the average case. From 8 to 14 years the refraction moved toward the myopic side at a rapid rate (increased), and this increase (average 0.23 diopter) continued, though at less than half the rate, up to the age of 20. Thereafter the amount of change was negligible. Up to the age of 33 there was a slight yearly increase of refraction (except for the thirtieth year); from 34 to 42 years the change was uniformly a net average decrease of 0.03 diopter, though this was slight; from 43 to 51 years the net average increase of refraction was again 0.03 diopter (increase of myopia, decrease of hyperopia) in each successive year.

Canadian Medical Association Journal, Montreal

38: 421-528 (May) 1938

- *Abnormal Functioning of Gastric Secretory Mechanism as Possible Factor in Pathogenesis of Peptic Ulcer. B. P. Balkin, Montreal.—p. 421.
Painless, Bloodless and Safe Hemorrhoidectomy. F. B. Bowman, Hamilton, Ont.—p. 430.
*Kraurosis, Leukoplakia and Pruritus Vulvae: Treatment by Resection of Sensory Nerves of Perineum. B. Usher and A. D. Campbell, Montreal.—p. 432.
Xanthomatosis Ossium. G. S. French, Owen Sound, Ont.—p. 435.
Carcinoma of Ampulla of Vater: Report of Two Cases. L. G. McCabe, Windsor, Ont.—p. 438.
Appendical Colic. D. E. Robertson, Toronto.—p. 443.
Id. A. Brown, Toronto.—p. 445.
Venereal Disease in Relation to Pregnancy. J. C. Goodwin, Toronto.—p. 447.
Treatment of Amebic Dysentery: Report of Ten Cases. Pauline Beregoff-Gillow, Montreal.—p. 456.
Use of Insulin in Urticaria: Preliminary Report. W. R. Caven, Toronto.—p. 459.
Deaths in Tetanus: Phenomenon of Toxin Release. W. E. B. Hall, St. Joseph, Me.—p. 460.
*Effect on Donors of Repeated Limited Blood Loss. F. Cadham, Winnipeg, Man.—p. 465.
Radiotherapy of Cancer of the Breast. P. Brodeur, Ottawa, Ont.—p. 467.
Carcinoma of the Esophagus. F. R. Scott, Toronto.—p. 470.
Pellagra: Case. Mary L. M. Palmer, Verdun, Que.—p. 473.

Gastric Secretion and Peptic Ulcer.—During his study of the physiology of the gastrointestinal tract, Balkin arrived at a new conception of the regulation of the secretory activity of the gastric glands. It became evident that under certain circumstances, owing to some defect in the secretory mechanism, gastric secretion may deviate from its normal course and conditions may arise which initiate destructive processes in the gastric mucosa. Histamine is present in the gastric juice, whether the secretion is stimulated by subcutaneous adminis-

tration of histamine, by electrical stimulation of the vagi or by sham feeding in dogs with esophagotomy and a gastric fistula. The concentration of the histamine equivalent of the gastric juice increases or diminishes with the increase or diminution of the rate of secretion of the gastric juice. The source of the histamine equivalent of the gastric juice is presumably the gastric mucosa itself. On the basis of these and other considerations the theory is advanced that the secretory fibers of the vagi during activity liberate histamine or histamine-like substances which stimulate the parietal cells. Since histamine has a strong effect on the blood vessels and is able to produce stasis in the capillaries, which may lead to the formation of erosions in the gastric mucosa, it is emphasized that in considering the causes of peptic ulcer the possible role of histamine must not be overlooked. This is not a new theory of the pathogenesis of peptic ulcer but an attempt to evaluate some of the consequences of abnormal functioning of the gastric secretory mechanism.

Kraurosis, Leukoplakia and Pruritus Vulvae.—Since August 1934, Usher and Campbell have performed resection of the sensory nerves of the perineum on eight patients in whom pruritus proved refractory to nonsurgical measures. The technic described by Learmonth, Montgomery and Counseller was adopted. While it is true that regressive changes do occasionally follow resection of the perineal sensory nerve, one must not lose sight of the fact that carcinoma in this region commonly follows leukoplakia, with pruritus the only symptom and excoriation from trauma the only visible lesion. On the other hand, if biopsies taken at the time of the nerve resection do not reveal malignant changes this procedure will relieve symptoms and does not preclude vulvectomy for carcinoma of the vulva if and when it is detected. Complete relief has been obtained in five of the eight patients for periods varying from five months to two and one-half years. In another case there was complete relief for two and one-half years, when vaginitis and leukorrheal discharge resulted in a slight recurrence which rapidly subsided under appropriate treatment. The patch of leukoplakia had also disappeared. In one patient the nerves could not be excised completely. Relief from symptoms was obtained in the remaining case, but the period of postoperative observation is as yet too short to permit the outcome to be determined. The patients have not been followed sufficiently long to determine whether the relief will be permanent. In the majority of cases in which operation was performed, local applications, roentgen therapy and endocrine therapy had been employed previously without success.

Effect on Donors of Repeated Blood Loss.—In the 1936 epidemic of poliomyelitis in Manitoba, convalescent serum for the treatment of the disease was prepared in the government bacteriologic laboratory. Cadham states that it was found expedient to have each of the 125 donors return at intervals and on each occasion to withdraw from 65 to 140 cc. of blood. Fifty of the 125 donors supplied blood six or more times (the maximum was twelve donations) at an average interval of one week. An investigation of the physical condition of the donors six months later disclosed no ill effects. Forty-seven of the fifty donors stated that they were improved in health; even those who were in apparently good health remarked on an increased feeling of well-being. Sixty-five of the donors experienced an improvement in appetite and seven commented on a clearer and healthier tone of the skin. Three donors had been subject to scattered acne pustules; within six weeks of the first withdrawal of blood this eruption disappeared. Seventy-two of the donors increased in weight, the increase varying from 3 to 15 pounds (1.3 to 7 Kg.). There was no decrease in the complement power of the blood, and the titer remained at the same normal level. No variation in blood volume was noted. No donor had anemia. Each of these donors one or more years previously had suffered from an attack of poliomyelitis. Four were far from robust; however, they had been selected because their blood carried a high titer of neutralizing substances. There was a definite improvement in the general health of the latter four donors; they stated that they were able to move about with less difficulty, which would indicate an improved muscle tone coincident with the improved health and increase in weight. Of 200 donors from whom from 50 to 75 cc. of blood was withdrawn on alternate

days over a period of from six to ten days for the purpose of obtaining normal human serum to be used in the treatment of patients with septicemia, none suffered any ill effects; the majority were benefited by the procedure. Why the removal of limited quantities of blood benefit the donor is not clear; obviously, it is not so much a question of disease as of physiology. The increased well-being and the increase in weight are apparently physiologic; the disappearance of acne pustules indicates a stimulation of certain immunity factors. Evidently, under certain circumstances the withdrawal of limited amounts of blood at regular intervals may prove of decided therapeutic value.

Journal of Biological Chemistry, Baltimore

123: 613-818 (May) 1938. Partial Index

- Concentration of Lecithin, Cephalin, Ether-Insoluble Phosphatide and Cerebrosides in Plasma and Red Blood Cells of Normal Adults. E. Kirk, Copenhagen, Denmark.—p. 637.
Volumetric Benzidine Method for Determination of Inorganic and Ethereal Sulfate in Serum. Marschelle H. Power and E. G. Wakefield, Rochester, Minn.—p. 665.
New Method for Determination of Iodine in Five Cubic Centimeters of Blood or Other Biologic Material. J. F. McClendon and A. C. Bratton, with technical assistance of R. V. White and W. C. Foster, Minneapolis.—p. 699.
Study of Proteins of Inactive and Active Mammary Gland. S. M. Jackson and R. A. Gortner, St. Paul.—p. 719.
Effect of Alloxan on Oxidation of Alcohol by Various Tissues. F. Bernheim, Durham, N. C.—p. 741.
Purification of Prothrombin. W. H. Seegers, H. P. Smith, E. D. Warner and K. M. Brinkhaus, Iowa City.—p. 751.

Journal of Clinical Investigation, New York

17: 207-368 (May) 1938

- *Effect of Eclamptic Blood on Urinary Output and Blood Pressure of Human Recipients. E. W. Page, Los Angeles.—p. 207.
Studies in Physiology of Artificial Fever: I. Changes in Blood Volume and Water Balance. J. G. Gibson 2d and I. Kopp, Boston.—p. 219.
Effect of Insulin on Concentration of Uric Acid in Blood. E. F. Rosenberg, Rochester, Minn.—p. 233.
Studies of Circulation in Patients Suffering from Spontaneous Myxedema. H. J. Stewart, J. E. Deitrick and N. F. Crane, New York.—p. 237.
*Heat Stroke: Clinical and Chemical Observations on Forty-Four Cases. E. B. Ferris, Jr.; M. A. Blankenhorn, H. W. Robinson and G. E. Cullen, Cincinnati.—p. 249.
Measurement of Tubular Excretory Mass, Effective Blood Flow and Filtration Rate in Normal Human Kidney. H. W. Smith, W. Goldring and H. Chasis, New York.—p. 263.
*Effect of Alcohol on Water and Electrolyte Balance in Man. W. M. Nicholson and H. M. Taylor, Durham, N. C.—p. 279.
Estimations of Work of the Heart During and Between Attacks of Angina Pectoris. I. Starr, C. J. Gamble, J. S. Donal and L. H. Collins, Philadelphia.—p. 287.
Critical Remarks on Determination of Urinary Excretion of Ascorbic Acid. M. van Eekelen and M. Heinemann, Utrecht, Netherlands.—p. 293.
Guanidine Bases in Blood of Dogs with Experimental Hypertension Produced by Constriction of Renal Arteries. C. G. Child, New York.—p. 301.
Effect of Vitamin D on Calcium and Phosphorus Metabolism: Studies on Four Patients. F. Albright and H. W. Sulkowitch, Boston.—p. 305.
Comparison of Effects of A. T. 10 (Dihydroxycholesterol) and Vitamin D on Calcium and Phosphorus Metabolism in Hypoparathyroidism. F. Albright, Esther Bloomberg, T. Drake and H. W. Sulkowitch, Boston.—p. 317.
Evaporation of Body Water in Lobar Pneumonia. G. K. Anderson, Rochester, N. Y.—p. 331.
Observations on Etiologic Relationship of Achylia Gastrica to Pernicious Anemia: VII. Resemblances Between Proteolytic Activity of Normal Human Gastric Juice on Casein in Neutral Solution and Activity of Intrinsic Factor. F. H. L. Taylor, W. B. Castle, R. W. Heinle and Margaret A. Adams, Boston.—p. 335.
*Excretion of Urea in Normal Man and in Subjects with Glomerulonephritis. H. Chasis and H. W. Smith, New York.—p. 347.
Effect of Total Sympathectomy on Occurrence of Shock from Hemorrhage. N. E. Freeman, S. A. Shaffer, A. E. Scheeter and H. E. Holling, with technical assistance of N. E. Marean, Philadelphia.—p. 359.

Effect of Eclamptic Blood on Urinary Output and Blood Pressure.—Page undertook to determine whether the transfer of 400 cc. of blood from patients with severe pre-eclampsia or eclampsia to normal pregnant women would have any effect on the blood pressure, urinary output and symptomatology of the recipient and, by standardization of the procedure, to discover in eclamptic blood traces of posterior pituitary in excess of the amount that might be present in normal blood. Thirty-seven determinations of antidiuretic effects together with blood pressure curves were performed on twenty-eight patients. As little as 0.01 unit of solution of

posterior pituitary may be readily detected on suitably prepared human test subjects. Transfusions of 500 cc. of blood from normal donors does not result in a significantly altered blood pressure or urinary output in the recipient, although the results suggest the presence of traces of posterior pituitary in normal blood. If small amounts of solution of posterior pituitary are added to human blood in vitro and allowed to stand for from thirty to sixty minutes before transfusion, a definite antidiuretic response may be obtained in the recipient. If large amounts of solution of posterior pituitary are given to donors prior to the withdrawal of blood, no definite antidiuretic response can be obtained in the recipient, indicating a rapid elimination or destruction of the hormone from the circulating blood stream. When amounts of 400 cc. of blood are rapidly transferred from patients with eclampsia or severe preeclampsia to normal pregnant women, the recipients do not show any rise in blood pressure, interference with diuresis or untoward symptoms. The results do not support the contention that there is a toxic substance in toxic blood or the theory that there is a hypersecretion of the posterior pituitary in eclampsia.

Heat Stroke.—Ferris and his colleagues studied forty-four patients with heat stroke admitted to the hospital during two severe heat waves in 1936. Cardiac failure or peripheral circulatory collapse was not evident in the majority of patients. The sodium chloride content of the blood was not significantly altered. The condition was associated with a moderate acidosis and hemoconcentration. The high body temperature appeared to be the chief cause of the symptoms of heat stroke. Old age, degenerative disease and acute alcoholism are important contributing factors in heat stroke. The onset was precipitated by a diminution or cessation of sweat in the majority of patients. Although the primary cause for the sudden cessation of sweat has not been determined, it appears that loss of chlorides, dehydration and circulatory failure are not responsible. Measures to lower the body temperature promptly are indicated; ice water tubbing with massage was the most effective method in severe cases.

Alcohol and Water and Electrolyte Balance.—Nicholson and Taylor ascertained the effect of alcohol in moderate quantities on the water and salt balance in healthy, young adult male volunteers. They were allowed to carry on their usual routine as students. A constant diet was given. Two duplicate samples of the diet were analyzed for the potassium, sodium, chloride, water and nitrogen content. The day was divided into three periods of eight hours. The urine was collected for each period, toluene added as a preservative and the specimens were kept in the ice box until used. The stools were collected for twenty-four hour periods. The blood samples were collected anaerobically, heparin being used as the anticoagulant. The subject was given alcohol in the form of whisky, gin or ethyl alcohol over a period of eight hours, when a second blood sample was obtained. The third and fourth blood samples were obtained eight and thirty-two hours respectively after consumption of alcohol. Five complete balance studies were made, the results of which were consistent regardless of the form in which alcohol was taken. Data reveal that there was a retention of sodium, chloride and potassium. A small amount of water was lost during twenty-four hours but this loss was more striking during the eight hour period in which the alcohol was given. Diuresis was produced and occurred always in the first four hours of the period, so that during the last four hours only small amounts of urine were voided, even though alcohol was taken during this time. Although there was a diuresis of water, the sodium, chloride and potassium ions were retained and their concentration in the urine was lowered. Accompanying the water diuresis, which occurred only while the subject was taking alcohol, there was a loss of weight greater than could be accounted for by the loss of water in the urine alone. The retention of the sodium and the chloride was greater when the intake of these ions was high, and in the two experiments in which the sodium chloride intake was inadequate there was a negative balance for these ions. In all experiments the potassium retention was great and apparently had no relationship to the amount of sodium or chloride retained. Potassium in excessive amounts

is a depressant and produces malaise, nausea, vomiting and headache, all of which symptoms are observed after excessive ingestion of alcohol. The increase in the concentration of plasma potassium after the ingestion of alcohol may be responsible for some of the after-effects of overindulgence in alcohol. The unpleasant symptoms of postalcoholic excess appeared at a time when the concentration of alcohol in the blood had fallen and when the potassium concentration was at its maximum.

Excretion of Urea in Glomerulonephritis.—Chasis and Smith determined the urea clearances in ten normal subjects and twenty-two subjects with glomerulonephritis, with special reference to the degree of concentration of the glomerular filtrate as indicated by the simultaneous inulin U/P ratio (the degree to which the glomerular filtrate has been concentrated by the reabsorption of water). Urea is invariably reabsorbed to some extent from the glomerular filtrate, whether this is at the normal level or is reduced by disease. This reabsorption is interpreted in terms of a hypothesis, based on independent evidence, in which it is assumed that water reabsorption occurs in two stages, one in the proximal tubule and one in the thin limb and distal tubule. At any inulin U/P ratio the reabsorption of urea proceeds in the nephritic kidney essentially as it would in the normal kidney. As the capacity to reabsorb water is impaired by disease, the fraction of urea reabsorbed decreases, so that the urea clearance approaches the rate of glomerular filtration. In none of the subjects examined was there evidence of increased back-diffusion of urea, the elevation of the blood urea in nephritis being a result solely of the reciprocal relationship between this term and the urea clearance, as expected in principle.

Journal of Lab. and Clinical Medicine, St. Louis

23: 775-886 (May) 1938

- Intravenous Autochemotherapy with Hemolyzed Blood: Technic and Leukopoietic Response: Preliminary Report. S. R. Dean and H. C. Solomon, Boston.—p. 775.
- Changes in Erythrocyte Fragility Due to Physical Exercise and Variation of Body Temperature. J. E. Davis, University, Ala.—p. 786.
- Excretion of Sulfanilamide in Perspiration. W. J. Highman Jr., Chicago.—p. 790.
- Degenerative Leukocytic Transformations Associated with Aging: Differential Identification of Monocytes. L. A. Erf, New York.—p. 791.
- *Leukocytic Variability and Its Relation to Meteorologic Alterations. M. Berg, Chicago.—p. 797.
- *Formation of Abnormal Blood Pigment as Complication of Sulfanilamide Therapy. I. Posner, N. W. Guthrie and Marjorie R. Mattice, New York.—p. 804.
- Hyperindicanemia in Renal Insufficiency and Significance of Diazo Reaction. S. R. Townsend, Boston.—p. 809.
- Transient Electrocardiographic Changes Noted During Attacks of Angina Pectoris: Report of Case. H. H. Shapiro and L. A. Smyth, Madison, Wis.—p. 819.
- Partition of Nitrogen in Canine Gastric Juice. S. A. Komarov, Montreal, Canada.—p. 822.
- Still's Disease with Hyperglobulinemia. A. E. Taussig, St. Louis.—p. 833.
- Influence of Calcium Salts on Digitalis Action. R. A. McGuigan and J. A. Higgins, Chicago.—p. 839.
- Microdetermination of Calcium in Water. E. L. Breazeale and R. A. Greene, Tucson, Ariz.—p. 845.
- *Standardization of Folin-Malmros Micro Blood Sugar Method for Capillary and Venous Blood and Its Adaptation to Photoelectric Photometer. L. F. Jourdonais, Evanston, Ill.—p. 847.
- Method for Staining Rickettsia in Sections. S. Ochi, Sapporo, Japan.—p. 852.
- Body Temperature Regulating Apparatus and Improved Axograph for Animal Experiments. M. L. Tainter, San Francisco.—p. 856.
- Simplified Method of Correcting Sedimentation Rate for Effect of Cell Volume. A. Hambleton and R. A. Christianson, London, Ont., Canada.—p. 860.
- Direct Reading Null Point Amplifier for Measuring Hydrogen Ion Concentrations and Oxidation-Reduction Potentials. F. L. Wynd and P. L. Varney, St. Louis.—p. 864.
- Method for Utilizing Illuminating Gas in the Brown, Fildes and McIntosh or Other Anaerobe Jars of the Laidlaw Principle. J. H. Brewer and J. H. Brown, Baltimore.—p. 870.
- Weight Curve Complicated by Deaths. R. D. Templeton and Mary C. Patras, Chicago.—p. 874.

Leukocytic Variability and Meteorologic Alterations.—The influence of the meteorologic alterations on the daily leukocyte count of four normal individuals was studied by Berg. The average level of the count and the degree of fluctuation varied with each individual. Variations in levels with constitutional differences were also observed. The neutrophilic

levels are slightly lower in winter in subject 1 and almost the same level in subject 3; however, both basophilic and eosinophilic levels are noticeably elevated in both in the winter. In general, the more pronounced the polar infalls the more pronounced are the peaks in the leukocyte picture. The meteorologic alterations have been shown for the most part to be associated with pressor episodes. Following these, there then occurs a vascular dilatation with a fall in diastolic pressure which is associated with an increase in the eosinophils, the appearance of more young forms, and an increase in the neutrophils and in the total leukocyte count. The fluctuations may in part be explained by the emptying of the reservoirs of cells, such as the spleen, liver and lungs. The daily records of five patients (one each of aleukemic lymphadenosis, myelogenous leukemia, lymphatic leukemia, chronic far-advanced pulmonary tuberculosis and far-advanced pulmonary tuberculosis) are presented. The degree and character of the fluctuations were influenced to varying degrees by the pathologic condition of the patient.

Abnormal Blood Pigment After Sulfanilamide.—Posner and his associates encountered four cases showing a specific effect of sulfanilamide therapy. In these patients, spectroscopic examination of the blood showed that the abnormal appearance of the specimens was associated with an absorption band in the red part of the spectrum. When the blood was diluted just enough to allow for the passage of light, this band divided the red-orange field into two parts occurring roughly in the ratio of 55:45, the line being slightly nearer the yellow end. On spectrometric measurement the density center of the absorption band, which was not sharply defined, was located at 634 millimicrons (the position given for methemoglobin by Bodansky). That the pigment encountered was not sulfhemoglobin was demonstrated in several ways. The methemoglobin was highly unstable, thus interfering with detection and quantitative determination. Cyanosis associated with methemoglobinemia is temporary and responds promptly when the causative agent is withdrawn. Except in mild cases, cyanosis occasioned by sulfhemoglobin persists for weeks, since the pigment is extraordinarily stable. Although the cyanosis associated with sulfanilamide therapy may cause no clinical concern so long as it is due to methemoglobin, the possibility of the development of sulfhemoglobinemia should not be ignored. Sulfhemoglobin (never methemoglobin) may be detected by spectroscopic examination of a transilluminated ear lobe. Since it is the absolute level of nonoxygenated hemoglobin which determines the presence or absence of cyanosis, sulfanilamide administration must be undertaken cautiously when the total hemoglobin concentration is low. If the erythrocyte count is normal and remains so (twice weekly checking is advisable), the appearance of definite cyanosis is a signal for temporary cessation of the therapy. With anemic patients, however, this warning is lacking. Spectroscopic examination may not suffice to indicate danger.

Folin-Malmros Micro Blood Sugar Method.—In determining blood sugars by the Folin-Malmros micromethod, Jourdonais obtained capillary and oxalated venous blood in the usual way. The technic of the method used is essentially that recommended by Folin and Malmros, with the exception of the length of time for heating. The tubes were placed in the water bath for twenty minutes. A 0.001 per cent dextrose solution was used as a standard. The directions for use of the colorimeter given by Goudsmit and Summerson were followed. A yellow glass filter proved to be of advantage. A high intensity of light increased the sensitivity of the colorimeter. It further resulted in a saving of time by making it possible to approach the null point of the galvanometer more rapidly. A yellow filter is advantageous for securing consistent results. The readings with the colorimeter do not follow Beer's law, and a calibration curve is necessary for accurate results.

Maine Medical Journal, Portland

29:79-106 (May) 1938

- Cancer of the Rectum. E. H. Risley, Waterville.—p. 79.
Organization of State Fracture Committee. A. Thorndike Jr., Boston.—p. 85.
Clinicopathologic Case Report: Intraperitoneal Rupture of Bladder and Complete Rupture of Urethra, with Bladder Floated Upward in Abdomen. H. L. Curtis, Portland.—p. 86.

Michigan State Medical Society Journal, Lansing

37:385-480 (May) 1938

- Diagnosis and Treatment of Diseases of Adrenal Glands. G. A. Harrop, New Brunswick, N. J.—p. 407.
Certain Reading Disabilities as Related to Speech. F. P. Currier, Grand Rapids.—p. 414.
Neurosyphilis: Importance of Early Diagnosis and Necessity of Specialized Therapy. G. W. Hyde, Detroit.—p. 419.
Education in Maternity Essential to Public Health. H. Emerson, New York.—p. 420.
Sulfanilamide in Urologic Infections. R. S. Breakey and J. F. Harrold, Lansing.—p. 425.

Minnesota Medicine, St. Paul

21:297-384 (May) 1938

- Estimation of Permanent Disability. G. R. Dunn, Minneapolis.—p. 297.
Enlargement of the Heart: Its Recognition by the Radiologic Method. P. Hallock, Minneapolis.—p. 303.
*Congenital Syphilis: Analysis of the Problem in Minnesota. F. W. Lynch, St. Paul.—p. 313.
Personal Surgical Observations. J. L. McLeod, Grand Rapids.—p. 317.
Etiology of Chorea. C. H. Schroder, Duluth.—p. 322.
Medical Books for the Laity. T. E. Keys, Rochester.—p. 325.

Congenital Syphilis.—Though only thirty-seven new cases of congenital syphilis have been observed in two years in the University and Ancker hospitals, it is evident that many of these could have been prevented. Lynch attempts to determine the reason for failure of preventive measures and in many of these cases it has been possible to place the responsibility for the failure. Future attempts toward the control of congenital syphilis require greater interest on the part of the medical profession and the provision of more adequate social service and health department facilities. The following procedures are suggested as methods for the prevention of congenital syphilis and its serious effects on the child: 1. Every woman with gonorrhea should have a Wassermann test in order to recognize early many cases of syphilis which are now passing unrecognized. 2. Every syphilitic woman should receive adequate treatment but should also be warned of the need to report to her physician early in any subsequent pregnancy and inform him of her syphilitic status. 3. Every pregnant woman should have a Wassermann test done early in pregnancy. 4. After the diagnosis of syphilis is made during pregnancy, treatment should be intensive. 5. At the time of delivery a Wassermann test should be performed on the maternal blood or the "cord" blood in every case.

New England Journal of Medicine, Boston

218:749-790 (May 5) 1938

- *Sulfanilamide in Treatment of Acute Gonococcal Urethritis: Clinical and Immunologic Observations. W. W. Spink and E. A. Gaston, Boston.—p. 749.
Cerebral Asphyxia During Nitrous Oxide and Oxygen Anesthesia. J. D. Stewart, Boston.—p. 754.
Immediate Flap Grafts Following Trauma. H. F. Day, Boston.—p. 758.
Progress in Study of Cardiovascular Disease in 1936. S. McGinn, Boston.—p. 759.

218:791-826 (May 12) 1938

- Effect of Irritants and Drugs Affecting Autonomic Nervous System on Mucosa of Normal Rectum and Rectosigmoid, with Especial Reference to "Mucous Colitis." B. V. White Jr. and C. M. Jones, Boston.—p. 791.
Treatment of Hay Fever by Injections of Pollen Extract Emulsified in Lanolin and Olive Oil: Preliminary Report. H. L. Natterman, Boston.—p. 797.
Adrenogenital Syndrome and Adrenocortical Tumors. G. F. Cahill, New York.—p. 803.

Sulfanilamide in Gonococcal Urethritis.—Spink and Gaston present the results of treatment and immunologic observations in twenty-one men with acute gonococcal urethritis treated with sulfanilamide. The patients were ambulatory. Eight of them had received previous treatment without diminution of their symptoms. With a few exceptions the only treatment prescribed was sulfanilamide and the forcing of fluids. Most of the patients continued at their daily occupations while under treatment. All were first given 4 Gm. of sulfanilamide daily in four divided doses. Sometimes the dose was reduced to 2 Gm. a day so as to determine the effect on the course of the disease and on the bacteriolytic titer of the blood. The drug was administered for from ten days to three weeks. It was continued as long as evidence of the infection was still present. Eleven patients were declared cured, seven had no urethral discharge but could not be proved as free from infec-

tion and three failed to respond to treatment. The administration of sulfanilamide results in an increase of the bactericidal power of the blood against the gonococcus. A high bacteriolytic titer is desirable in patients with gonococcal infection, since the action of bacteriolysins has been shown to be a major mechanism in rendering the blood stream free from organisms. While a high bacteriolytic titer is an expression of humoral immunity, it cannot be correlated closely with local immunity. Spink and Keefer have shown that, while the blood stream may be rendered free from gonococci by the introduction of immune horse serum, organisms may still be present in prostatic secretions. This was illustrated in the present study by the three patients classified as failures. The bactericidal power of the blood was elevated while sulfanilamide was being administered, but the urethral exudates persistently contained gonococci. It may be argued from these cases that, although the bactericidal tests done against two strains of gonococci showed the drug to be effective, the actual strain harbored by the patient would not be affected by sulfanilamide. Since the bactericidal mechanism is important in clearing the blood stream of organisms, sulfanilamide should be a useful adjunct in the treatment of local gonococcal infections.

Northwest Medicine, Seattle

37: 127-160 (May) 1938

- Management of Abdominal Adhesions. B. P. Mullen, Seattle.—p. 127.
Ureterointestinal Implantation: Bilateral with Cystectomy and Hysterectomy in One Operation. J. H. Besson, Portland, Ore.—p. 131.
Congenital Absence of Portion of Small Intestine. J. McGregor and M. Rothenberg, Bellingham, Wash.—p. 134.
Simple Air Valve Apparatus for Office Use. E. W. Simmons, Portland, Ore.—p. 136.
*Large Twins. A. Mathieu, Portland, Ore.—p. 137.
Gastroscopic Examinations: Review of Eighty Cases. R. H. Loe, Seattle.—p. 139.
Malignant Priapism. A. H. Peacock, Seattle.—p. 143.
Lung Abscess Secondary to Axillary Infection. H. B. Kellogg, Seattle.—p. 145.
Prevention of Foot Drop in Prolonged Bed Rest. D. R. Loree, Ellensburg, Wash.—p. 147.

Large Twins.—A more or less thorough survey of the literature revealed only three reports regarding large twins with a combined weight of 7,000 Gm. or more. Through personal communications Mathieu collected seventeen additional reports of large twins. The highest combined weight of the twins in the series, excluding enormous twins reported by Warren (combined weight of 16,102 Gm.) is 9,180 Gm., the lowest 7,000 Gm. The smallest individual child weighed 3,400 Gm., the largest 4,670 Gm. The sex of the twins in this collection was mentioned in only six instances. In five, both babies were males. In the sixth (the author's), one was a male and the other a female. The male infant was 170 Gm. heavier, the combined weight was 7,880 Gm.

Psychiatric Quarterly, Utica, N. Y.

12: 213-404 (April) 1938

- Review of Research Efforts of the New York State Psychiatric Institute and Hospital During the Year 1937. N. D. C. Lewis, New York.—p. 217.
Aspects of Electroencephalogram in Epilepsy and Feeble-mindedness. W. E. Rahm Jr. and A. C. Williams Jr., New York.—p. 230.
Is the Paroled Patient a Menace to the Community? H. M. Pollock, Albany, N. Y.—p. 236.
Use of Methylene Blue in Treatment of Catatonic Dementia Praecox Patients. W. J. Alexsahlt, Helmut, N. Y.—p. 245.
Concerning Hallucinations of Smell. G. M. Davidson, Ward's Island, N. Y.—p. 253.
Psychologic Elements in Continuous Bath Therapy. C. N. Allen, Hanover, N. H.—p. 271.
Sudden "Exhaustive" Death in Excited Patients. N. R. Shulack, Wingdale, N. Y.—p. 282.
Pathologic Changes in the Brain in Cases of Experimental Phosphorous Intoxication. A. Ferraro, G. A. Jervis and W. H. English, New York.—p. 294.
Study of the Problem of Suicide. B. Pollack, Rochester, N. Y.—p. 306.
Folie à Deux: Review of Literature Since 1900 and Case Report. J. A. Brussel, Brentwood, N. Y.—p. 331.
Hyperostosis Frontalis Interna: Review of Literature. O. C. Perkins, Brooklyn, and A. M. Biglan, Central Islip, N. Y.—p. 341.
Psychotherapy in Neurotic Patients with Somatic Disease. E. Davidoff, Syracuse, N. Y.—p. 351.
Schizophrenia in Children. J. Louise Despert, New York.—p. 366.
Epileptic Seizure in Hypopycemic Treatment of Schizophrenia. D. Ruslander, Buffalo.—p. 372.
The Startle Pattern in Epileptic Patients. W. A. Hunt, H. Strauss and C. Landis, New York.—p. 375.

Surgery, St. Louis

3: 645-804 (May) 1938

- *Bacteriology of Spreading Peritonitis Complicating Acute Perforative Appendicitis: Clinical and Experimental Study. J. O. Bower, J. C. Burns and H. A. Mengle, Philadelphia.—p. 645.
Calcified Fecalith in Appendix: Report of Case of Acute Suppurative Appendicitis Perforated by Calcified Fecalith. H. J. Shelley, New York.—p. 658.
Surgical Treatment of Complicated Duodenal Ulcer. W. L. Wolfson and R. E. Rothenberg, Brooklyn.—p. 663.
*Primary Carcinoma of Biliary System: Clinicopathologic Analysis for Forty Cases. R. D'Aunoy, M. A. Ogden and B. Halpert, New Orleans.—p. 670.
Experimental Study of Behavior of Free Fat Transplants. C. E. Gurney, Rochester, Minn.—p. 679.
Method of Constant Suction Applied to Levine Tube. C. E. Welch, Boston.—p. 693.
Partial Gastrectomy in Treatment of Peptic Ulcer. F. G. Connell, Oshkosh, Wis.—p. 696.
Hemangioma and Its Treatment. W. T. Peyton and N. L. Leven, Minneapolis.—p. 702.
Operative Treatment of Hypospadias: Report of Thirteen Cases. C. D. Creevy, Minneapolis.—p. 719.
Treatment of Dislocation of the Shoulder. H. Milch, New York.—p. 732.
Congenital and Developmental Coxa Vara. G. A. Duncan, Norfolk, Va.—p. 741.
Cancer of the Breast in the Male: Report of Four Cases and Illustrations of Simplified Radical Mastectomy. J. Sarnoff, Brooklyn.—p. 766.
Model to Illustrate Mechanics of Respiration and Movements of Mediastinum With and Without Various Kinds and Degrees of Bronchial Stenosis. L. Eloesser and A. Freeman, San Francisco.—p. 774.

Bacteriology of Spreading Peritonitis.—Bower and his co-workers studied the bacteriology of spreading peritonitis in living man and in dogs during life and at necropsy in an effort to establish the identity of the causative organisms. Specimens for cultures were removed from fifty-five patients suffering from gangrenous appendicitis associated with spreading peritonitis. Cultures were taken from the peritoneal cavity of 154 dogs. The number and kinds of aerobes in spreading peritonitis in man are greater than those found in the dog. The greatest increase is in *Bacillus coli*, 396 per cent. Four of the five members of the streptococcus group were found in the dog. This group was 81.7 per cent greater in the human being than in the dog. On the other hand, *Staphylococcus albus* was found in the dog and not in man. There is a close resemblance of the anaerobic flora in the two groups. In man *Clostridium welchii* was found in 63 per cent. The only appreciable difference in percentage between the two groups, as concerns *Clostridium welchii*, was in the association of this organism with other anaerobes and aerobes; in man this was 40 per cent as compared with 29 per cent in the dog. A gram-positive anaerobe, not identified but not *Clostridium welchii*, was found in 17 per cent in man and 6 per cent in the living dog. Anaerobic streptococci and *Vibrio septique* were the only two important anaerobes identified in the cultures taken from the dog that were not found in man. Obligate anaerobes and *Bacillus sporogenes* were found in human cultures but not in the dog. The *Bacillus histolyticus* was not found in either group. Gram-positive diplococci and cocci were not found in man.

Primary Carcinoma of Biliary System.—D'Aunoy and his associates base their study on the clinical records, the necropsy observations and the gross and microscopic appearances of preserved specimens in forty cases of primary carcinoma of the biliary system encountered among 6,050 necropsies. The study is particularly concerned with the site of the primary growth, its structure, its spread locally and to distant parts, its clinical manifestations and their duration and the immediate cause of death in the patient. Of the forty tumors, twenty-three were primary in the liver, six in the extrahepatic biliary ducts and eleven in the gallbladder. Twenty of the patients were Negroes (eighteen male, two female) and twenty were white (twelve male and eight female). Of the twenty-three primary neoplasms of the liver, sixteen were liver cell and seven were cylindric cell carcinomas. All those primary in the extrahepatic biliary ducts and gallbladder were cylindric cell carcinomas. In the six cases of carcinoma of the extrahepatic biliary ducts, the primary growths were small, not more than 1 cm. in diameter. In four of these the common bile ducts and in two the common hepatic ducts were the site of the growth. In all six cases, however,

the neoplasms obstructed the duct lumens, causing dilatation of their proximal portions with resultant jaundice. All but one of these patients had calculi in the gallbladder. In the eleven cases of primary carcinoma of the gallbladder, the walls of the organ were thickened by neoplastic infiltration. A fungating mass protruded into the cavity of the organ in four of the cases, and biliary calculi (mixed gallstones) were present in seven. The microscopic structure of the liver cell carcinomas varied. Variations in the structural arrangement of the cells, the amount and quality of the stroma and the extent of secondary changes, such as hemorrhage and necrosis, were responsible for the differences in microscopic and gross appearances of the growths. In many instances, in addition to local infiltration or spread by lymph and blood channels, the growths metastasized to regional lymph nodes and distant organs. The majority of the patients with liver cell carcinomas were jaundiced and showed cirrhosis of the liver with ascites. All six patients with primary cylindric cell carcinomas of the extrahepatic biliary ducts were jaundiced, six had cholelithiasis (mixed gallstones) and one had cirrhosis of the liver with ascites. Four of the eleven patients with primary cylindric cell carcinomas of the gallbladder had cholelithiasis, jaundice and cirrhosis of the liver with ascites; one had cholelithiasis, jaundice and cirrhosis; one had cholelithiasis and ascites; one had cholelithiasis and cirrhosis; one had jaundice and cirrhosis, and one had cirrhosis only. The temperature of all the patients, irrespective of the type or location of the tumor, showed only slight variations from the normal. The illnesses lasted for from two to sixteen months, with an average duration of four and one-half months. In all but two of the patients in whom the neoplasms were incidental observations the new growth was the principal lesion, and in twenty-five patients it was the immediate cause of death.

Surgery, Gynecology and Obstetrics, Chicago

GG: 819-946 (May) 1938

- Influence of Serum Protein on Motility of the Small Intestine. R. P. Barden, W. D. Thompson, I. S. Ravdin and I. L. Frank, Philadelphia.—p. 819.
- Noninvasive Potential "Carcinoma" of Cervix. C. S. Stevenson, Baltimore, and E. Scipades Jr., Budapest, Hungary.—p. 822.
- Acute Putrid Abscess of Lung: II. Analysis of Forty-Five Consecutive Operative Cases. H. Neuhoef and A. S. W. Touroff, New York.—p. 836.
- Study of Hyperemesis Gravidarum, with Special Reference to Blood Chemistry. O. Glassman, New York.—p. 858.
- The Obstetric Shoulder Trauma. O. Scaglietti, Bologna, Italy.—p. 868.
- *Bacterial Species Found in Nonsterile Surgical Catgut Sutures. R. O. Clock, Scarsdale, N. Y.—p. 878.
- Endocholedochal Sphincterotomy. R. Colp and H. Doubilet, New York.—p. 882.
- Hallux Valgus. H. C. Stein, New York.—p. 889.
- Value of Delayed Single Pedicle Skin Flaps in Plastic Repair of Scalp. W. B. Davis, Philadelphia.—p. 899.
- Carcinoma of Bronchus: Clinical and Pathologic Study of 164 Cases. J. J. Stein and Hope L. Joslin, Hines, Ill.—p. 902.
- Skeletal Distraction of Tibia. D. M. Bosworth, New York.—p. 912.
- Operability in Cancer of Rectum. T. E. Jones, Cleveland.—p. 925.
- Transvesical Diathermy in Treatment of Carcinoma of Bladder. A. Randall and C. A. W. Uhle, Philadelphia.—p. 927.

Bacteria in Sutures.—Clock examined thirty-six brands of surgical catgut sutures and found fifteen brands to be nonsterile. Of the 589 lots tested 161 lots contained nonsterile sutures. From the nonsterile catgut sutures, thirty-six spore-forming bacterial species were isolated and identified; including five sporulating anaerobes together with thirty-one aerobic and facultative spore-forming bacilli. All the aerobic and facultative spore-forming bacilli, together with two species (*Clostridium bifermentans* and *Clostridium sporogenes*) of the sporulating anaerobes, are commonly considered nonpathogenic; but the three other species of sporulating anaerobes (*Clostridium fallax*, *Clostridium histolyticum* and *Clostridium welchii*) are pathogenic. Some sutures of some brands of catgut contained aerobic and facultative spore-forming bacilli which are nonpathogenic, while in other sutures of the same lot were found pathogenic, sporulating anaerobes. On chemical analyses of sutures of those brands of catgut which proved to be nonsterile, appreciable quantities of soluble chemical compounds were found. The physical characteristics of these sutures indicated that they had been subjected either to a low degree of heat or to no heat.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

46: 233-292 (May) 1938

- Diabetic Surgery: II. End Results. I. Wills and P. A. Gray, Santa Barbara, Calif.—p. 233.
- A Discussion of Appendicitis: Supplemental to a Report Given in 1932. F. R. Fairchild, Woodland, Calif.—p. 240.
- Chronic Cholecystitis with Reference to the Irritable Colon. E. C. Moore, Los Angeles.—p. 244.
- Intestinal Obstruction in Children: Report of 100 Cases Treated at the Children's Hospital in Los Angeles. W. J. Norris, Los Angeles.—p. 249.
- Myoma of the Stomach. C. G. Toland and W. P. Kroger, Los Angeles.—p. 259.
- Malignant Disease of the Small Intestine: Delayed Anastomosis Following Resection in Chronic Obstruction. P. K. Gilman, San Francisco.—p. 269.
- *Experiences with Scopolamine in Obstetric Practice: Reasons for Its Discontinuance by the Author. W. W. Bell, Seattle.—p. 276.

Scopolamine in Obstetric Practice.—In the use of scopolamine as an obstetric analgesic Bell found that there were some inexplicable deaths. In an endeavor to determine whether or not these deaths were directly attributable to the use of scopolamine, he made an analysis of 441 consecutive cases personally treated over a period of three years. Scopolamine had been used in 225 cases, and pentobarbital sodium was substituted for scopolamine in 216 cases. Scopolamine was usually effective in producing a desirable degree of amnesia and analgesia, but its cumulative effect on the respiratory center of the infant so often resulted in fetal asphyxia that the author has not felt justified in continuing its use. Although the dangers to the life of the mother as a result of the use of scopolamine may usually be eliminated, he so fully recognizes the right of the infant to live that he is convinced that neither the mother nor practitioners can justify its use merely in an endeavor to minimize the suffering of the mother in childbirth. His experiences with 216 patients to whom pentobarbital sodium was given instead of scopolamine, without the untoward results sometimes incident to scopolamine, have convinced him that the barbiturates are not only as effective as scopolamine but are far safer for both mother and child.

Yale Journal of Biology and Medicine, New Haven

10: 419-530 (May) 1938

- Johannes Müller and the Modern Conception of Cancer. H. W. Haggard and G. M. Smith, New Haven, Conn.—p. 419.
- Roentgen Methods for Routine Obstetric Pelvimetry. H. Thoms and H. M. Wilson, New Haven, Conn.—p. 437.
- Blood *in Vivo*: I. Changes Due to Respiration. L. F. Nims and C. Marshall, New Haven, Conn.—p. 445.
- Serologic Patterns of Human Serums: Reciprocal Heteroagglutination Reactions of Human and Sheep Bloods. G. H. Smith, New Haven, Conn.—p. 449.
- Clinical Study of Prefrontal Lobe Function. R. Messimy and W. J. German, New Haven, Conn.—p. 455.
- Epidemiologic Studies in Whooping Cough. C. E. Culotta, New Haven, Conn.; D. Dominick, Philadelphia, and Elizabeth Ross Harrison, New Haven, Conn.—p. 473.
- Vertebrate Photoreceptors. S. R. Detwiler, New York.—p. 485.
- The Naegle Pelvis: Summary and Description of Case. H. Thoms, New Haven, Conn.—p. 513.
- *Staphylococci of the Human Vagina. L. Weinstein, New Haven, Conn.—p. 519.

Staphylococci of the Human Vagina.—Weinstein examined 419 vaginal secretions for the presence of viable staphylococci. Of 196 pregnant patients and 223 with or without disease of the female genitalia, 191 were found to be harboring staphylococci. Eighty-two of the pregnant and 109 of the nonpregnant women yielded staphylococci. Most of the strains isolated were of the albus type, aureus being found in a much smaller number of cases; 90 per cent as contrasted with 9.9 per cent. No correlation could be established between the incidence of the albus type and any particular clinical syndrome. *Staphylococcus aureus* was recovered, however, with the greatest frequency from pregnant individuals. Of the nineteen strains isolated, nine were found in cases of pregnancy, three were recovered from cases of *Trichomonas vaginalis* vaginitis, one from an individual with a retroverted uterus, four from cases of "nonspecific" vaginitis, one from an individual with dysmenorrhea and one from a patient in whom there was no pathologic change of the genitalia. The albus type of staphylococcus deserves further study in its possible relation to disease of the female genitalia, since many of the types isolated possess the property of hemolyzing blood, occasionally coagulate serum and ferment mannitol which, according to Chapman, are indicative of potential pathogenicity.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Bristol Medico-Chirurgical Journal

55: 1-100 (Spring) 1938

- Medical Defense. C. A. Moore.—p. 1.
Some Clinical Applications of the Male and Female Sex Hormones. G. L. Foss.—p. 23.
Thoracic Surgery. A. L. d'Abreu.—p. 43.
Lobectomy for Bronchiectasis: Case. A. W. Adams—p. 63.

British Journal of Experimental Pathology, London

19: 95-170 (April) 1938

- Meningococcus Broth Culture Filtrates: Failure of Protection Experiments. B. G. Macgrath.—p. 95.
Tumors in Rats and Mice Following Injection of Thorotrast. F. R. Selbie.—p. 100.
Observations on Living Vaccinia and Ectromelia Viruses by High Power Microscopy. F. Himmelweit.—p. 108.
Chemical Composition of Active Agent of Rous Sarcoma No. 1. A. Pollard.—p. 124.
Formamide Method for Extraction of Polysaccharides from Hemolytic Streptococci. A. T. Fuller.—p. 130.
*Effect of Sulfonamide Compounds on Certain Bacteria in Vitro. C. J. C. Britton.—p. 140.
*Preparation of Protective Serums Against Hemolytic Streptococci. H. Loewenthal.—p. 143.
Specific Complement Fixation with Shope's Fibroma Virus and Its Relationship to Virus-Neutralizing Properties of Immune Serums. C. E. van Rooyen.—p. 156.
Serologic Properties of Polysaccharide Isolated from Mucoïd Substance of Hemolytic Streptococci. H. Loewenthal.—p. 164.

Effect of Sulfonamide Compounds on Bacteria in Vitro.—Britton observed the effects of five sulfonamide compounds on fifty strains of twenty different organisms (bacillus, staphylococcus, streptococcus, brucella, clostridium and micrococcus) by a simple in vitro method. Of these twenty, only in the cases of *Streptococcus viridans* and *pneumococcus* types 1 and 2 and group 4 were any bactericidal or bacteriostatic effects observed.

Protective Serums Against Hemolytic Streptococci.—Loewenthal finds that the antigen responsible for the production of the antibody effective against the invasiveness of hemolytic streptococci is intimately associated with the capsule which these cocci develop in the early hours of growth in culture. This antigen is extremely labile, being readily destroyed by heat and low concentrations of formaldehyde or merthiolate. Exposure of a suspension of young encapsulated cocci to a temperature of 55 C. for twelve minutes kills the organisms but leaves the capsular antigen intact. More prolonged heating at this temperature rapidly destroys this antigen. With suspensions of cautiously heat-killed young cultures it has been possible for the first time to prepare potent protective serums against hemolytic streptococci in the mucoïd phase. This method of immunization also gives rise to protective antibody against nonmucoïd strains more rapidly and regularly than the old methods. The result of a single experiment suggests that the production of a potent polyvalent serum by simultaneous immunization with a number of strains is possible.

British Medical Journal, London

1: 829-880 (April 16) 1938

- Origin of Cancer. W. Cramer.—p. 829.
Alleged Effect of Acetylcholine on Immobilized Joints. A. M. Harvey.—p. 835.
*Glasgow Experience of Increased Dysentery Prevalence. E. Bloch.—p. 836.
*Carcinoma of the Palate: How Often Does It Mask Malignant Disease in Maxillary Antrum? J. R. Nuttall.—p. 839.
Tinea of the Foot. P. K. Fraser.—p. 842.

Increased Prevalence of Dysentery in Glasgow.—During the past three years the annual number of cases of dysentery registered in Glasgow has been increasing and has become relatively high. During the second half of 1937 the city with 203 cases shared in the reported countrywide increase in prevalence. Bloch reviews some aspects of the prevalence of dysentery during these years and of raised incidence on previous occasions. Dysentery became notifiable in 1919, when 117 cases were registered. The annual average over the whole period 1919 to 1937 was 81.4 cases. Reports from various sources regarding the seasonal incidence of dysentery differ widely.

The years under special review here might be regarded as revealing some resemblance between the seasonal incidence of dysentery and that of the other diarrheal diseases. Deaths from diarrhea and enteritis are highest in either the third or the fourth quarter of the year. Despite the increased attention paid recently to dysentery, many mild and many bacteriologically negative cases remain unnoticed. Suspicion of dysentery may not be raised when cases do not occur in groups. Institutional infections form a substantial and increasing proportion of the total number of cases. The excess of total cases for 1937 over 1936 is accounted for by institutional cases. Some relation does probably exist between the institutional and the home cases. The gross figures for all cases of dysentery without subdivision according to type of bacillus revealed no special feature with regard to sex incidence. The figures with respect to the age of incidence of both institutional and noninstitutional cases confirmed the recognized high incidence of dysentery in children between 1 and 15 years of age. Deaths certified as due to dysentery remain few. Sixteen persons died of dysentery in 1936 and nine in 1937. A majority of the cases of bacillary dysentery are probably still due to the Flexner type of organism. During the years 1929 to 1936 positive specimens from Glasgow, according to the city bacteriologist, have numbered 413 Flexner and 278 Sonne. It is not uncommon to find different types and strains of endemic dysentery organisms associated in a multiple focus. The first large Glasgow outbreak of Sonne dysentery occurred in a big general municipal institution toward the end of November 1937 and continued till the end of January 1938. In December forty-two cases were registered from this focus and only two from other Glasgow institutions. Home infections numbering twenty-eight were also registered in Glasgow in December. The seventy-two December cases thus constituted more than a fourth of the year's 272 cases. The epidemic assumed the form of two successive waves of infection. There was no definite evidence of spread of infection by food, milk or water, but it was thought important that the milk supplies should be scalded in the wards and attention devoted to the methods of cleansing food utensils, especially milk containers, passing through the central kitchen and dairy premises. No incidence of Sonne dysentery was detected in these departments, all the members of the staff of which were examined bacteriologically.

Carcinoma of the Palate.—Nuttall presents an analysis of 167 cases of malignant palatal ulceration and of 104 cases of antral carcinoma passing through a single clinic. As a result of the investigation it is suggested that the tendency to recurrence after treatment of carcinoma of the palate is due to the fact that a large proportion of "palate growths" are really neoplasms of the antrum. With certain limitations it is a wise generalization that every case of carcinoma of the palate must be considered and treated as an antral growth unless it has been proved not to be so.

1: 881-934 (April 23) 1938

- Some Problems in Psoriasis. J. T. Ingram.—p. 881.
*The State of the Heart in Gallbladder Disease: Personal Investigation. S. M. Laird.—p. 884.
Meningitis Treated with Prontosil: Four Cases. F. H. Jacob.—p. 887.
Unusual Complications of Labor. H. Burt-White.—p. 888.
*Unusual Physical Signs in Lobar Pneumonia. G. S. Erwin and R. J. McGill.—p. 891.
Position of the Patient in Gastroscopy: Operation Table Attachment. H. Taylor.—p. 892.

The Heart in Gallbladder Disease.—Laird determined the condition of the heart in sixty-five consecutive cases of disease of the gallbladder and the biliary tract. There were fifty-eight women and seven men. Fifty of the patients had a clinical cardiac lesion. Of the sixty-five patients, twenty-four were regarded as obese. This suggests that the obesity, if a factor, is not the whole explanation of the presence of cardiac lesions in these cases of disease of the gallbladder. Fifty patients were followed up or were under observation until death occurred. Operation was performed in forty and thirteen of these had cardiac manifestations. Cholecystectomy produced a cure of the symptoms of gallbladder disease in 78 per cent of cases in which this operation was performed and appeared to be a satisfactory measure for obtaining amelioration of the cardiac manifestations occurring in cases of disease of the

gallbladder. The presence of similar cardiac conditions in cases of disease of the gallbladder does not constitute a contraindication to cholecystectomy. Fatal pulmonary embolism occurred as a postoperative complication in 5 per cent of the cases. There was some evidence to suggest that the longer disease of the gallbladder is permitted to exist the greater is the possibility of cardiac manifestations making their appearance. The incidence of lesions of the heart in cases of disease of the gallbladder was not influenced by the presence of jaundice. Coronary artery thrombosis occurred in 12 per cent of the cases and on occasion may present difficulty in differential diagnosis. The electrocardiographic evidence was inconsistent in many cases of myocardial insufficiency when compared with the clinical condition of the patient but was of great value in cases in which coronary artery thrombosis had occurred.

Physical Signs in Lobar Pneumonia.—Lobar pneumonia may present, in place of the classic physical signs, abnormal signs confusing the diagnosis even when the onset, symptoms and temperature all seem conclusive. These perplexing features require explanation and this Erwin and McGill believe can be found only in the physiologic and pathologic changes in the underlying lung, since physical signs in themselves, even when taken in groups, are not conclusive proof of any particular disease. Thus the consolidation of pneumonia due to alveolar exudate is usually evidenced by dullness to percussion and by bronchial breathing, and these are the accepted signs of the disease. When alveolar exudation is complicated by bronchial filling there is produced a different group of physical signs—those of a solid lobe with a blocked bronchus. A complete absence of breath sounds is discovered, together with other signs suggestive of a moderate accumulation of fluid.

Indian Medical Gazette, Calcutta

73: 193-256 (April) 1938

Present Position of Opium Smoking Habit in India: Part III. Studies on Physical and Mental Effects Produced by Opium Smoking (Analytic Review of 300 Opium Smokers Examined in the Field). R. N. Chopra and G. S. Chopra.—p. 193.

***Incidence of Rheumatic Infection in India** (as Judged by Admission and Postmortem Rates and by Clinical Experience of Teaching Physicians at Medical Colleges and Schools of India): Part I. V. S. Mangalik and H. Stott.—p. 203.

Subcutaneous Nodule of Rheumatism. P. G. Gollerkeri.—p. 207.

Bacteriophage Treatment of Dysentery in Private Practice. M. O'Connor.—p. 210.

Herpes Zoster: Experiments with Tissue Lysate as a Therapeutic Agent. P. A. Mapleston and L. M. Ghosh.—p. 212.

Regional Ileitis. V. M. Kaikini.—p. 214.

Treatment of Splenomegaly by Injections of Milk. C. L. Pasricha and G. S. Chopra.—p. 218.

Modified Technic for Phrenic Evulsion. R. Viswanathan.—p. 220.

Rheumatic Infection in India.—In order to determine the incidence of rheumatic infection Mangalik and Stott reviewed the Thomason Hospital records for the years 1930-1936. During this period there were nine cases of acute rheumatic infection, giving an admission rate of 1.17 per thousand medical admissions. For every case of acute rheumatic infection admitted to the hospital during the period under review, fourteen cases of chronic valvular disease, mostly of mitral and of undoubted rheumatic origin, were admitted. One is justified in drawing the conclusion that the initial rheumatic infection in Indians is rarely fulminating and acute and rarely compels the patient to seek hospitalization; it probably has a slow, insidious course and onset—mostly vague pains in the body and joints and not severe enough to confine the patient to bed. The most common age for acute rheumatic infection is between 5 and 15 years. The most common age for the patient to seek hospital aid for cardiac disabilities connected with a chronic mitral valvular lesion is between the ages of 20 and 35. There is no definite distribution in the sex or caste of the patients, nor is the monthly admission rate of any great significance. Rheumatic nodules are rare. Acute rheumatic infection in India, with polysynovitis, carditis and chorea, though rare in the hospital-going class of Indians, is a definite clinical entity to be seen in India.

Journal of Laryngology and Otology, London

53: 283-354 (May) 1938

Otogenous Nonpurulent Encephalitis. E. Jerlang.—p. 283.

Observations on Variation in Hearing in Otosclerosis. S. Suggit.—p. 294.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

45: 209-404 (April) 1938

Ectopic Pregnancy. N. P. Mahfouz.—p. 209.

***Fetal Mortality in the Offspring of Apparently Healthy Women.** Mabel F. Potter.—p. 233.

Very Large Ovarian Cyst Removed by Enucleating it from Ovary ("Ovarian Cystectomy"). V. Bonney.—p. 250.

Enucleation of Bilateral Ovarian Cysts from a Young Nullipara. R. J. Kellar.—p. 252.

Gynandroblastoma of the Ovary. W. P. Plate.—p. 254.

Seminoma or Dysgerminoma of the Ovary. P. M. G. Russell.—p. 258.

Hydatidiform Mole: Statistical and Clinical Study. Probodh Chandra Das.—p. 265.

***Diagnosis of Intra-Uterine Death by a Spectrographic Method.** O. V. Jones.—p. 281.

Height of Anterior Shoulder and Its Relation to Position of Fetal Heart. N. A. Purandare.—p. 287.

Wet-Specimen Demonstration Frames for Teaching Purposes. K. V. Bailey.—p. 289.

***The Cycle of the Woman.** J. Samuels.—p. 291.

Fetal Mortality in the Offspring of Healthy Women.

—On the supposition that frequent abortions and stillbirths may be due to some endocrine abnormality, i. e., a deficiency or excess of essential hormones, Potter performed a series of Aschheim-Zondek tests on the urine of nineteen pregnant women who had previously been unable to carry a pregnancy to term, to see whether the reactions differed from the reactions obtained from the urine of normal pregnant patients. Although the urine of pregnant women who produced stillbirths and abortions frequently gave perfectly normal Aschheim-Zondek reactions, the results were definitely weaker than those with the urines of normal pregnant patients. The nineteen patients with a history of habitual stillbirth and abortion were placed on large oral doses (up to 18 grains, or 1.2 Gm., daily) of corpus luteum (progesterin). Three of these cases ended in failure. There were six cases of threatened abortion in this series, in each of which the pregnancy was preserved. This series of cases of habitual stillbirths and abortions gives a high percentage of pregnancies successfully terminated, especially compared with what the same patients accomplished unaided by progesterin. Without this treatment the nineteen patients had among them fifty-five pregnancies. Of these only eight were successful and forty-seven ended in failure. The same nineteen patients, under treatment with progesterin, achieved success with sixteen pregnancies and only three failed. It is suggested that the factor in the corpus luteum responsible for these successes is probably different from the factor responsible for the structural changes of the endometrium preparatory to pregnancy. It is further suggested that theca lutein cells produce the hormone which inhibits uterine contractions and which probably remains potent if given orally.

Diagnosis of Intra-Uterine Death.—Jones outlines a spectrographic method of diagnosing intra-uterine death of the fetus. It is based on a specific spectroscopic change that can be demonstrated in the urine of women carrying a dead fetus. Pure estrogen was found to exhibit selective absorption, with a broad band having its maximal absorption in the ultraviolet near 281 millimicrons and a minimal about 260 millimicrons. Both theelin and theolol have almost identical absorption curves. Accordingly, the absorption intensity of all the estrogenic extracts was measured at 281 millimicrons. Extracts from urine of normal and abnormal pregnancy were obtained and after all the theelin and theolol were extracted (by means of the two technics) all were found to display a characteristic absorption band in the same region as that of pure estrogen. Procedure 1: A 200 to 300 cc. sample of urine of pregnancy, adjusted to pH 1 to 2 with concentrated hydrochloric acid, is refluxed at 100 C. for three hours on a water bath. On completion of the hydrolysis of estrogenic complexes, the cold solution is extracted three times with 100 cc. of freshly redistilled ether. The ethereal extract is washed with sodium bicarbonate and water, the solvent is removed and replaced by 5 cc. of specially purified ethyl alcohol and its ultraviolet absorption determined, a 1 to 5 mm. ccll being used. Procedure 2: The crude ethereal extract obtained as in procedure 1 is freed from ether, dissolved in toluene and reextracted with normal sodium hydroxide. After the extract is acidified with hydrochloric

acid it is again extracted with ether and examined as in the final stages of procedure 1. It is possible to diagnose intra-uterine death of the fetus by submitting the urinary extracts obtained by both preparative technics to spectrographic analysis. If the fetus is alive there will be an appreciable difference between the two estimations, whereas if the fetus is dead the two estimations will be approximately the same. Twelve patients examined spectrographically showed an absorption intensity from 6 to 18 (by both preparative procedures) considered to be characteristic of intra-uterine death of the fetus, and in each case the patient was subsequently delivered of a macerated fetus. In four other patients in whom intra-uterine death of the fetus was suspected the spectrographic examination of the urine suggested that the fetus was alive and the accuracy of this result was subsequently confirmed, as each pregnancy proceeded normally. In three cases of suspected intra-uterine death the results were misleading. Two of these patients were suffering from toxemia, while the third carried an anencephalic fetus. The hormone balance must be influenced by fetal abnormalities and, therefore, special caution must be exercised when one is applying this test to such patients. The author explains the spectrographic phenomenon by inferring that a substance absorbing in the same region as estrogen is absent, or greatly reduced in quantity, in the urine of women carrying a dead fetus. He is thus led to postulate the existence of a heretofore unrecognized hormone in the urine of a normal pregnancy, with apparently a definite role in normal gestation. Such a hypothesis implies that intra-uterine death of the fetus may be connected sometimes at least with a specific hormone deficiency or imbalance. This hormone imbalance may be either a cause of or a sequel to intra-uterine death. An attempt was made to isolate this unknown product, and ultimately it was traced to the toluene residues of the Marrian technic. From 20 liters of urine, treated in small batches, a few milligrams of the final product was obtained in a crystalline form. This x product showed selective absorption near 294 millimicrons and had a melting point in the region of 225 to 230 C., while its biologic reaction was estrogenic.

Cycle of the Woman.—Samuels points out that a sexually mature woman ovulates twice in each cycle, young nulliparas three times. The ripening of the second ovum suppresses the formation of the corpus luteum of the first ovum by means of hormone. Nidation takes place within three days after fertilization, as all early pregnancy cyclograms indicate. The surface cells of the endometrium die to the accompaniment of bleeding when there is a sudden change or withdrawal of hormone. These cells usually die as a result of the withdrawal of luteal hormone, but it is certain that a sudden cessation of the supply of folliculin can also cause this. Bleeding may also occur in the case of young girls during an ovulation as the result of a sudden and sharp decline in the curve. It may also occur when large quantities of folliculin are supplied to the endometrium and then suddenly withdrawn. A corpus luteum and luteal hormone are not essential to desquamation with bleeding. When the hormone changes are slow the endometrium can recover without bleeding. The mucous membrane is transformed by the second corpus luteum menstruale. Cyclograms tend to prove that in all probability predominating luteinizing hormone of the hypophysis may also incite the first suppressed corpus luteum to form luteal hormone after the second unfertilized ovum has died. The possibility of fertilization is greatest during the ovulation decline and the two to three days preceding it. On the third day after the beginning of the ovulation decline the possibility of fertilization is only slight; thereafter fertilization is impossible. A woman is absolutely sterile for three days after the second ovulation decline until from two to three days after menstruation begins. After this she is relatively sterile until three days before the first ovulation decline. The cyclogram accordingly serves as a guide in determining all processes of ovulation and conception and in diagnosing and treating irregularities of menstruation. The cycloscope (described in THE JOURNAL Feb. 26, 1938, page 696) will therefore prove to be an indispensable instrument not only for the gynecologist but also for all general practitioners.

Lancet, London

1: 925-976 (April 23) 1938

- Some Deficiencies of Nutrition and Their Relation to Disease: II. Nutritional Deficiency in Relation to Anemia. C. C. Ungley.—p. 925.
Gonorrhea in Women and Children. Margaret Rorke.—p. 932.
*Observations on Cellular Basis of the Gordon Test for Lymphadenoma. D. G. F. Edward.—p. 936.
Effect of Nicotinic Acid on Pellagrins Maintained on a Pellagra-Producing Diet. Jean M. Grant, Elisabeth Zschiesche and T. D. Spies.—p. 939.
*Biologic Polyvalency of Antigens, with Special Reference to Hay Fever. J. Freeman and W. H. Hughes.—p. 941.
Diastolization in Catarrhal Conditions of Nose and Middle Ear in Children. A. Miller.—p. 943.

The Gordon Test in Lymphadenoma.—The discovery that anencephalitogenic agent was present in the lymph nodes from cases of lymphadenoma was first made by Gordon in 1932. In an effort to discover which type of cell contained the agent, Edward has carried out experiments using human cells and also the tissues from certain animals not tested previously. At the same time microscopic examinations have been made of the brains of the experimental animals and the histologic changes induced have proved a reliable test for the agent. It was found that the agent could be demonstrated in the mixtures of mature granular cells and myelocytes obtained from cases of myelocytic leukemia, but not in suspensions composed chiefly of myeloblasts. The one case of eosinophilia examined gave a strongly positive result. Weak positive results have also been obtained with lymphocytes; this is surprising, since suspensions of lymph nodes in lymphatic leukemia always give a negative biologic test (Gordon 1933). The presence of the agent has also been confirmed in pure suspensions of neutrophil leukocytes. No histologic differences have been found depending on the various sources of the agent. The condition of the affected animals during life is the same. The agent in lymphadenomatous glands has the same effect as that in leukocytes. In such diseases as myelocytic leukemia and myelocytosis, in which there is infiltration of the lymph nodes with myeloid cells, these nodes give a positive test. In lymphadenoma granular cells are usually found in the lymph nodes, the eosinophils being the most conspicuous. If the biologic test in lymphadenoma depends on the cell content of the lymph nodes, its limitations are obvious when used as a diagnostic measure in a case of lymphadenopathy.

Biologic Polyvalency of Antigens.—Freeman and Hughes find that foreign grasses not grown to any extent in England give positive cutaneous reactions in people with hay fever who have not been exposed to them previously. Pollens of maize and bamboo could not be distinguished antigenically from the pollens of English grass. The pollen of sugar cane behaves in the same way as the pollen of English grass in the majority of cases. There is a slight antigenic difference between the pollen of sugar cane and the others, as a minority of the patients desensitized to timothy lost their reaction to sugar cane more slowly. Also three patients were found who were not sensitive to cane pollen but who were definitely sensitive to timothy. A comparison between the pollen of the gramineae and the pollen of garden flowers showed that such exotic "grasses" as maize, bamboo and sugar cane are far more closely related to the pollen of English grasses antigenically than to that of English garden flowers.

Medical Journal of Australia, Sydney

1: 683-720 (April 16) 1938

- Maternity and Some of Its Problems. H. S. McLelland.—p. 687.
Refractometry and Concentration of Bile. W. J. Penfold and J. Sutherland.—p. 692.
Medical Organization with Mechanized Formations. C. G. Shaw.—p. 699.
Pituitary Gland and Carbohydrate Metabolism: II. Influence of Prolactin on Carbohydrate Metabolism. Charlotte M. Anderson.—p. 701.

Journal of Oriental Medicine, Mukden, Manchoukuo

28: 53-70 (April) 1938. Partial Index

- Experimental Study of Influence of Methemoglobin Poison on Living Body. S. Nagazumi.—p. 53.
Significance of Blood Sugar During Sweat Secretion in Man. S. Ito.—p. 61.
Ice Sports Among School Children from Point of View of Sport Medicine. S. Ito.—p. 62.
Various Particles of Bacterial Cells and Practical Application of Staining of Granulae. T. Hachimoto.—p. 63.
Etiologic Study on Endemic Gout in Jehol: II. Results of Animal Experiments. S. Suzuki.—p. 67.

Journal d'Urologie Médicale et Chirurgicale, Paris

45: 289-384 (April) 1938

- *Results of Renal Decapsulation. H. Godard.—p. 289.
Autonephrectomy of Tuberculous Kidney: Case. G. Jasienski.—p. 306.
Suprapubic Incision of Empty Bladder. A. Diamantis.—p. 312.

Renal Decapsulation.—Godard reviews three cases in which bilateral decapsulation was performed. The first patient was a girl, aged 10 years, who became anuric following an appendectomy and in whom complete remission took place subsequent to decapsulation. At a second intervention, following recurrence three years later, lesions suggestive of chronic glomerular nephritis were observed. Remission occurred after the second operation also. The second patient was a girl, aged 5 years, who presented subacute glomerulonephritis marked by anuria. Death occurred shortly after decapsulation. The third patient was a girl, aged 3 years, who developed nephrosis marked by complete anuria, stomatitis, myosis and prostration, following accidental swallowing of mercuric oxycyanide. Death ensued forty-eight hours after decapsulation. These cases led the author to experiment on the effects of decapsulation on mercurial nephritis and on diuresis: Mercury was administered intravenously to five rabbits, which were then decapsulated. Three of them died, one two hours and two six days after operation. Of the survivors, one was killed ten days later and the kidneys were removed for microscopic study. Of five other rabbits that received mercury but were not decapsulated, three died within ten days and two recovered spontaneously. Accordingly, decapsulation did not benefit the poisoned animals. In another experiment with two rabbits, the volume of urine was measured before and after their decapsulation. The volume decreased temporarily immediately after operation; no appreciable polyuria or modifications of the urea concentration were observed. Since in the first patient a thick fibrous new growth was observed at the second intervention to have replaced the original capsule, the author decided to investigate possible similar formations in experimental animals. Late postoperative examination of decapsulated rabbits revealed neocapsular tissue thicker than the original in two animals, and fibrous layers of variable thickness in two others. Although a comprehensive study of the literature leaves the impression that decapsulation exerts a favorable influence on anuria, definitive therapeutic evaluation of the procedure should be approached with caution. There is the possibility that decapsulation in addition to its direct influence on the kidneys may elicit vascular and nervous reactions, owing to the release of proteolytic products in the operative field.

Revue Belge Sciences Médicales, Louvain.

10: 89-176 (March) 1938

- Coupled Punctures of Hemopoietic Centers in Diseases of Blood. P. Emile-Weil, P. Isch-Wall and S. Perlès.—p. 89.
*Indications for Surgical Treatment in Splenomegalies. R. Grégoire.—p. 103.
Classification of Purpuras. P. Chevallier.—p. 113.
*Action of Ascorbic Acid on Vascular Resistance: Influence of Mode of Administration. M. Adant.—p. 126.
Introductory Remarks to Pharmacodynamic Study of Hemostatics by Method of Correlation. J. Roskam.—p. 134.
Cervical Reticuloendotheliomas. N. Goormaghtigh.—p. 147.
Comparative Studies on Mycosis Fungoides and Hodgkin's Disease. S. Lapière.—p. 159.

Surgical Treatment in Splenomegalies.—Grégoire emphasizes that the results of splenectomy depend not so much on the surgical technic and on the skill of the surgeon, but rather on his ability properly to evaluate the indications and contraindications to the surgical treatment. Of the splenomegalies, he says that there are those which do not require operative treatment and those which do. The splenomegalies which do not require operation include the splenic hypertrophies of a tumoral nature, such as Gaucher's disease, Hodgkin's disease and leukemia. Aside from the splenectomies in which surgical treatment is dangerous or at least useless, there is another category in which surgery is not necessary. With this group, the author classes all those cases in which medical treatment suffices to affect cure or improvement; for instance, the splenic changes of syphilis, leishmaniasis, bilharziasis and malaria. On the other hand, in the presence of one of these splenomegalies of known cause, in which the medical treatment is of little

influence, recourse to splenectomy may be necessary because of disorders in the blood, the vessels or the liver. Increase in size of the spleen, progressive anemia and hemorrhages are the chief indications for surgery. Before an operation is decided on it is important to determine the functional capacity of the liver. An irregular and hard liver with sharp outlines in a person with poor general condition must be regarded as a contraindication to the operation. The author refuses to perform an operation in cases in which the urea content of the blood is below a certain level. After the liver has been thoroughly examined for contraindications to surgical treatment, the vascular system should receive attention. Thrombosis of the portal vein and adhesions between the spleen and the walls of its bed are contraindications to splenectomy. Discussing 115 splenectomies performed by himself, he says that in the first fifteen operations he had an immediate mortality of 33 per cent. In the later cases the mortality fell to 7 per cent. As regards the late results of splenectomy for splenomegaly, he says that the hemorrhagic tendency is nearly the only danger that has to be feared. Of thirty-seven patients who were operated on, nine did not present hemorrhage, while the twenty-eight others had had hemorrhages before the operation, such as epistaxis and bleeding from the gums. Of the aforementioned nine patients, two had malarial hypertrophy, two had tumoral hypertrophy, one had kala-azar, one had leukemia and three had splenomegaly of unknown origin. The twenty-eight splenomegalies with considerable hemorrhages were for the most part of the type characterized by the presence of Gamna nodules. Of these twenty-eight patients, twenty-one remained free from hemorrhages, but the seven others had recurrences of hemorrhages. The late results of splenectomy are good, for the author observed 81 per cent of permanent cures. They were entirely free from those changes in the blood and in the capillaries which make the prognosis unfavorable.

Ascorbic Acid and Vascular Resistance.—According to Adant, the question of the relation of ascorbic acid to the vascular fragility is still a subject of controversy. Whereas some investigators observed that a diet in which the vitamin C supply is deficient produces an increase in the vascular fragility, others have been unable to corroborate this observation and could not detect a parallelism between vascular resistance and the ascorbic acid content of the blood. Since a review of the literature seemed to suggest that the mode of administration of ascorbic acid might be important, the author studied the influence of the intravenous injection and of the ingestion of ascorbic acid on the vascular resistance. The results obtained indicate that the mode of administration makes a difference in the action of ascorbic acid on the vessels. The intravenous injection of 100 mg. of ascorbic acid produces a rapid and strong but transitory augmentation of the vascular resistance. This action is exerted even in persons who are saturated with vitamin C. On the other hand, the ingestion of 300 mg. of ascorbic acid does not modify this resistance either in persons who are saturated with vitamin C or in those who have a vitamin C deficiency. Finally, if normal children, whose deficit does not exceed 2 Gm., are saturated with ascorbic acid by ingestion, the vascular resistance, measured on a day following the saturation, shows only a slight rise in five out of eighteen cases. This increase is too slight and too inconstant to be regarded with certainty as a consequence of the saturation.

Revue de Chirurgie, Paris

57: 85-170 (Feb.) 1938

- *Nontuberculous Purulent Axillary Pleurisy. Clavelin and Sarroste.—p. 85.
Treatment of Closed Fractures of Two Bones of Leg: Statistics on Ninety-One Cases. Solcard and Badelon.—p. 113.
Epicondylitis Caused by Sports. J. Chavannaz and L. Marjou.—p. 126.
Relapses After Gastrectomies. H. Llucia.—p. 142.

Nontuberculous Purulent Axillary Pleurisy.—Clavelin and Sarroste report their observations on nine cases of purulent axillary pleurisy which they observed among a total of forty-nine nontuberculous pleural suppurations. They think that the anatomoclinical peculiarity of the localization, the relatively benign character and several diagnostic and therapeutic difficulties

of this process deserve emphasis. The disorder develops after an acute pneumopathy. It appears in two forms: the one chronic, aseptic, producing a low sound and often latent for long periods, a veritable roentgenologic discovery; the other one acute, usually due to streptococci and developing like a purulent pleurisy of the large cavity. The axillary localization of pleural suppurations appears after a limited cortical pulmonary focus. It is preceded by a phase of generalized pleural edema and it forms itself as the result of a defensive perifocal union of the pleural layers. The axillary pleurisy evolves afterward as a limited and closed pleural abscess until maturation. The older the process is, the thicker becomes the visceral pleura; in the chronic pleurisies it forms a shell which prevents absolutely all pulmonary expansion. The treatment of acute purulent axillary pleurisy consists in awaiting the period of maturation of the pleural abscess and in opening it at the sloping point by pleurotomy with costal resection. The sequels are slight, the results excellent. Chronic axillary pleurisy, on the other hand, justifies a thoracotomy, followed generally by pulmonary decortication. Although its evolution is less explosive than that of the acute form, its treatment is difficult and there frequently remain serious sequels.

Schweizerische medizinische Wochenschrift, Basel

68: 553-576 (May 14) 1938

Tasks and Aims of Geomedicine with Especial Consideration of Causes of Diseases. J. Eugster.—p. 553.

*Experiences with Protamine Zinc Insulin. G. B. Constam.—p. 556.
Therapy with Sulfanilamide Substances. A. Alder and N. Markoff.—p. 560.

Question of Types of Diphtheria Bacilli. Erika Wissler.—p. 561.

Treatment of Fractures of Fingers. A. Fonio.—p. 563.

Pathogenesis of Giant Growth of Fetuses on Basis of Birth of Two Giant Infants. E. Schulthess.—p. 563.

Problem of Harmfulness of Endonasally Administered Medicaments That Contain Oil. A. Marum and M. Kleissner.—p. 565.

Protamine Zinc Insulin.—Constam gives a brief history of the development of the insulin preparations with prolonged action and then evaluates his own experiences and those of others with protamine zinc insulin. He shows that although hypoglycemic manifestations are less frequent after the administration of protamine zinc insulin than after ordinary insulin, they are more difficult to detect and more serious in their course. On account of the danger of hypoglycemic manifestations it is inadvisable to give large doses of protamine zinc insulin to ambulatory patients. Great precaution is necessary in applying experiences and dosages on hospital patients to ambulatory patients. Moreover, protamine zinc insulin should be given only to those patients whose intelligence, character and occupation give assurance that the regulations of the administration will be strictly followed. The patients and the members of their families must be acquainted with the different prodromal signs of a hypoglycemic shock as well as with the measures to be taken. They must know how to arrange the diet and how to handle the insulin syringe. The insulin dosage must be strictly adjusted to the metabolic condition, and for this reason daily control of the urine is necessary. Before great exertions, the quantity of insulin should be reduced and the intake of carbohydrate increased. Protamine zinc insulin should never be given more than once in twenty-four hours. In many cases it will make possible a reduction in the number of injections or a concentration of the insulin injections to the morning hours. In the most severe and extremely labile cases it is often impossible to reduce the number of injections, but it may prove feasible to regulate the strong fluctuations in the blood sugar and to limit the hyperglycemia in the morning. For patients who for years have been well adjusted to treatment with ordinary insulin a change to protamine zinc insulin is inadvisable, because, as has been pointed out by Bernard Smith, the regulatory mechanism of these patients has become completely adapted to the rapidly acting insulin. In conditions in which the insulin requirements change rapidly, such as injuries, intercurrent diseases and operations, ordinary insulin is used alone or in combination with protamine zinc insulin. The author concludes that the new insulin with the prolonged action has made the insulin therapy easier for many patients. However, the use of the new insulin has its limitations.

Annali Italiani di Chirurgia, Bologna

17: 137-220 (Feb.) 1938

*Microscopic Study of Gastric Walls Near Malignant Epithelial Tumors. E. Ruggieri.—p. 137.

Heteroplasty of Ureter: Experiments. C. Calef.—p. 153.

Differential Diagnosis Between Acute Appendicitis and Diseases of Upper Segment of Urinary Tract. G. S. Donati.—p. 173.

Pneumococcal Peritonitis: Clinical Study. E. Forti.—p. 195.

Microscopic Studies of Gastric Wall Near Cancer.—Ruggieri studied, microscopically, nineteen cases in which the cardiac segment of the gastric wall was removed in the course of gastric resection for cancer. The author found cancer cells in the layers of the gastric wall as far as 7 cm. from the macroscopic periphery of the tumor, and pathologic alterations of the tissues of the wall as far away as 9 or 10 cm. He therefore advises wide resection. It is important that care should be taken in making the sutures, as the tissues are extremely fragile and their powers of self reparation are diminished.

Lattante, Parma

9: 261-326 (May) 1938

*Gastric Chromoscopy with Neutral Red in Normal Infants and in Nutritional Disturbances in Infants. A. Ferro.—p. 269.

Infantile Acrodynia: Case. R. Dardani.—p. 291.

Syphilis in Mothers. M. Monacelli.—p. 295.

Gastric Chromoscopy in Infants.—Ferro studied the secretory functions of the stomach of fifty normal infants and of thirty who were suffering from nutritional disturbances by means of gastric chromoscopy and the chemical behavior of the gastric secretion in the course of the test. Most of the infants ranged in age from 1 month to 1 year. Only four in each group were older than 1 year. Chromoscopy was done during fasting, after administration of an intramuscular injection of 1 or 2 cc. of a 1 per cent solution of neutral red in sterile distilled water (according to the age and body weight of the infant). On appearance of the dye in the gastric secretion the infants were fed once on their original diet, whether natural, artificial or mixed. The gastric secretion was withdrawn before and thirty, sixty and 120 minutes after a feeding and the chemistry of the secretion was determined. The author found that the free and total acidity of the gastric secretion of fasting infants are low in the majority of cases. Hydrochloric acid appeared late in the gastric secretion after a feeding and in insufficient amount in thirty-five normal and in twenty-one infants with nutritional disturbances. The time of chromoscopy, which is the time which elapses between the injection and the appearance of the dye in the gastric secretion, varied between eight and twelve minutes in forty-five normal infants and between eleven and thirty-two minutes in eighteen patients. The dye failed to appear in the gastric secretion in five normal infants and in twelve patients. The age and the type of feeding, natural, artificial or mixed, did not have any influence on the results. The time of chromoscopy and the intensity of hydrochloric acidity were in relation to each other in only some of the cases of each group. The test was repeated after two weeks in eleven normal infants. The results were the same as those obtained in the first test in only three instances. The author concludes that chromoscopy can be easily and harmlessly used in infants but that it has no clinical value for secretory functions of the stomach. However, the results show that the secretory function of the gastric mucosa for dyes are diminished in nutritional disturbances in infants, as compared with those of normal infants.

Policlinico, Rome

45: 893-936 (May 9) 1938. Practical Section

Investigation of Method of Krumwiede and Nobel on Extraction of Precipitin Antigen from Bacteria. A. Alessandrini.—p. 893.

*Treatment of Malarial Splenomegaly by Epinephrine (Ascoli's Method). S. Liverato.—p. 899.

Leptomeningeal Hemorrhage in Young Woman: Case. G. Dalla Torre.—p. 904.

Epinephrine in Malarial Splenomegaly.—Ascoli's treatment for malaria was reported in THE JOURNAL May 8, 1937, page 1065. It consists in intravenous injections of progressively increasing doses of epinephrine, which are administered daily until thirty injections have been given. Liverato treated seven

adults presenting malaria of the daily, tertian and irregular types of from two to fourteen years' duration. There was intense splenomegaly and anemia in all cases and the patients were in poor general condition. Treatment was discontinued by two of the patients. Treatment gave satisfactory results in the other five cases. The author thinks that the treatment is harmless. In some cases there is a transient intolerance but treatment can be continued without interruption. While the treatment is being taken the appetite and general condition of the patients improve, weight increases, the malarial skin tinge disappears, the blood improves and splenomegaly is progressively reduced. In the group of patients observed by the author at the end of the treatment the weight of the patients increased from 4 to 9 Kg., erythrocytes increased from 1,000,000 before treatment to 2,500,000 per cubic millimeter of blood after treatment. Hemoglobin increased from 20 to 40 per cent. The results of the treatment are permanent.

Semana Médica, Buenos Aires

45: 897-952 (April 28) 1938. Partial Index

- *Study and Treatment of Hereditary-Familial Neurologic Diseases with Predominant Lesions at Spinal Cord. R. Soto Romay.—p. 897.
Some Characteristics of Enlargement of Right and Left Ventricles. P. Cossio and R. Dambrosi.—p. 929.
Acute Postoperative Dilatation of Stomach. J. E. Igarzábal.—p. 936.
Embolism from Intramuscular Injection of Substances in Oil. I. R. Steinberg.—p. 945.

Hereditary Neurologic Diseases.—Soto Romay states that the various hereditary familial neurologic diseases with predominant lesions at the spinal cord are clinical forms of a process of degeneration of certain segments of the nervous system. The group of familial neurologic diseases with lesions of the spinal cord have many common symptoms and analogous anatomopathologic lesions. The author states that there are atypical and transitional forms between familial spasmodic paraplegia, progressive amyotrophy of Charcot-Marie type and Friedreich's hereditary ataxia. In the course of the disease the patients may show transformation of one type to another or the association of two or more atypical forms of the disease. The author reports three cases, in a mother and her two children. The three patients suffered from a combined form of spasmodic paraplegia, progressive amyotrophy and hereditary ataxia. In all three the factor of heredity and infection existed. The amyotrophy of the distal part of the legs as well as of the feet and hands was severe in the mother and in the oldest son, aged 13 years. The disease was of slow evolution in the mother, acute in the son and latent in the daughter, aged 7 years. The microscopic study of the amyotrophic muscle, which was taken by a biopsy, showed waxy degeneration of the muscular fibers, with loss of striation. There were proliferation of the sarcolemma nuclei, perivascular infiltration and proliferation of the interstitial tissue. The author reports satisfactory results of a combined treatment of vitamins and liver extracts. The evolution of the disease stopped and the patients gained some muscular force and control of the nervous symptoms. The author calls attention to the diagnostic value and significance of the contralateral Schaeffer sign, which is positive in acute hereditary neurologic diseases and shows involvement of the pyramidal segment. It was positive in the author's male patient.

Deutsche Zeitschrift für Chirurgie, Berlin

250: 89-262 (April 12) 1938. Partial Index

- Studies on Electrocoagulation of Bones and Joints. H. Zschau.—p. 89.
*Rare Types of Abdominal Grip. H. Uebermuth.—p. 149.
Vegetative Innervation of Synovial Membrane of Human Knee Joint. P. Sunder-Plassmann and K. Daubenspeck.—p. 158.
Thyroid and Vitamin B. E. Schneider.—p. 167.
Diagnostic Significance of Displacement of Pineal Body in Alterations of Intracranial Pressure. M. Ernst.—p. 224.
*Chronic Mastopathy Newly Considered. R. Wanke.—p. 234.

Abdominal Grip.—Uebermuth observed, in the course of a grip epidemic in the beginning of 1937, occasional cases of what he considered primary grip peritonitis. The observations in his own three cases and the review of recent literature suggest that primary grip infection of the peritoneum is a definite entity presenting a fairly characteristic picture. The disease begins with vomiting, diarrhea, tenderness in the left lower half of the

abdomen, distention, arrest of fecal current and flatus, dry tongue, fast pulse and fever. A laparotomy reveals a diffuse peritonitis with a proffuse greenish-yellow slimy and entirely odorless exudate. Cultures from the exudate fail to reveal influenza bacilli. In one of the author's cases the cultures were entirely negative and in two hemolytic streptococci were grown. The intestinal loops are red, those of the terminal ileum presenting grayish-whitish deposits and areas of bluish-black discolorations due to subserous hemorrhages. The rest of the viscera show nothing of importance. There is in the beginning a leukopenia. The mode of infection may be hematogenous or enterogenous, with the point of origin in enteritis of the terminal ileum. The former type offers a worse prognosis.

Chronic Mastopathy.—According to Wanke, statistical studies show that the incidence of chronic mastopathy in unmarried women is no greater than in the married women. His own observations suggest that the neglect of a "natural function" is not the cause of the disease. Likewise not much, if any, pathogenic importance can be attached to too frequent functional activity of the breasts in oft repeated pregnancies and nursing, as is evident from the fact that women who have borne many children are seldom subject to this disease. The fecundity of women with mastopathy is only slightly inferior to that of women with normal breasts. Investigations thus far have thrown little light on the question of the fertility of a woman who has had mastopathy, although the author's personal observations suggest that women who have had mastopathy at the age of 30 or later are less likely to have children. Quantitative determinations of the excretion of the estrogenic substance in the urine of two patients demonstrated a striking diminution with a reversal of the normal curve, thus pointing to a profound disturbance in the estrogenic substance economy as the cause of the mastopathy. The condition bears a resemblance to gynecologic disorders only so far as the latter present the evidence of certain functional alterations of a vegetative kind (hypoplasia of the genitalia). The author stresses the fact that a simultaneous glandular cystic hyperplasia of the endometrium was never observed—further evidence that this condition is likewise caused by a disturbance of the estrogenic substance economy, in this instance of too much hormone. The treatment of mastopathy is determined primarily by the differential diagnosis based on the results of biopsy. Endocrine therapy brought about remarkable results in some and encouraging results in all the author's cases. Chronic mastopathy develops in all probability on the basis of ovarian insufficiency.

Klinische Wochenschrift, Berlin

17: 649-688 (May 7) 1938. Partial Index

- Nonspecific Action of Hormone of Male Gonad. W. H. Veil and O. Lippsohn.—p. 655.
Influence of Prolonged Oral Administration of Small Quantities of Estrogenic Substance on Adrenals. M. Danner.—p. 658.
*New Test for Qualitative and Quantitative Demonstration of Corpus Luteum Hormone. J. H. Duyvené de Wit.—p. 660.
Acid Covering of Skin and Bacterial Defense: Regional Differences in Hydrogen Ion Concentration of Surface of Skin. A. Marchionini and W. Hausknecht.—p. 663.
*Influence of Strychnine Irritation on Acetylcholin Content of Nervous System and Abolishment of Irritation by Dial-Anesthesia. J. Fegler, H. Kowarzyk and Z. Lelusz-Lachowicz.—p. 667.

Test for Corpus Luteum Hormone.—Duyvené de Wit points out that formerly the corpus luteum hormone was demonstrated by means of the changes it elicits on the uterine mucosa of rabbits during apparent pregnancy. The two test methods most widely used for this purpose were those of Allen-Corner and of Claiberg. However, these tests have the disadvantage that they require a comparatively long time (six days) and detect only comparatively large quantities of hormone. The author, having observed that the female minnow is highly sensitive to the corpus luteum hormone (progesterone), decided to use minnows as a test subject. He found that the ovipositor of minnows shows an increase in length after a comparatively small quantity of progesterone has been added to the water of the aquarium containing the minnows. The growth persists for from five to seven hours and is macroscopically visible. Within certain limits the growth of the ovipositor is proportional to the amount of hormone added. Thus the test makes possible the quantitative demonstration of progesterone. It detects

quantities as small as from 10 to 20 micrograms. The test is not only rapid but also economical. The minnows can be used repeatedly. Discussing the specificity of the test, the author says that the growth of the ovipositor in minnows has been used as a test for other sex hormones for those of the estrogenic type and for those of the androsterone group. Between the time that the hormone is introduced into the aquarium and the onset of the growth of the ovipositor, a certain time elapses. This time is designated as the latent period. If hormones of the estrogenic type are added the latent period is ten or twelve hours, but if hormones of the androsterone or progesterone group are added the latent period is one hour. It is important that fifty times more androsterone than progesterone is required to produce the same reaction. The author also gives a definition of the ovipositor unit; it is equal to one eighth of the distance between the insertion and the terminal rim of the extended organ.

Medizinische Klinik, Berlin

493-528 (April 14) 1938. Partial Index

When Does Fibrous-Caseous Pulmonary Tuberculosis Require Institutional Care? K. Schubert.—p. 496.

*Formation of Adhesions Following Pleurisy with Effusion. P. Leifer.—p. 498.

Tuberculin Sensitivity in Rheumatic Disorders. O. Chiari and R. Matriardi.—p. 500.

Acrocephalosyndactylia: Case. O. Sittig and K. O. Baumrueck.—p. 502.

Adhesions Following Pleurisy with Effusion.—Leifer discusses the correspondence between the type of inflammatory processes in pleurisy with effusion, of tuberculous origin, and the extent of the adhesions formed. The more severe the pleuritic inflammations the more copious the effusion, and the longer the latter remains within the cavity the more it becomes inspissated until fibrinous layers, the foundation of adhesions, are formed. If the tuberculous foci are present in the pleura the inflammatory and effusive processes will be greatest; if the influence is less direct (through bronchial pneumonia or the bronchial lymph nodes) the pleurisy will be less severe. The author does not agree with Illig and others that the formation of adhesions has a favorable immunobiologic influence on the tuberculosis and is not to be combated. Adhesions may have definitely unfavorable consequences: circulation may be impaired by the unilateral constriction of the thoracic organs, the crippled lung may show greater susceptibility to bronchopneumonia, and the presence of adhesions may make it impossible to perform a needed pneumothorax. Formation of adhesions is best minimized by frequent punctures which counteract the tendency of long standing effusion to thicken into fibrinous layers. The author made clinical and roentgen follow-up studies in fifty of 150 cases in which repeated punctures were done. Slight adhesions had formed in forty-one cases, adhesions were almost completely lacking in four and they were extensive in only five. The author concludes that repeated puncture, even if it cannot prevent adhesions, can limit their extent.

Skandinavisches Archiv für Physiologie, Berlin

78: 249-312 (March) 1938

Transformation of N-Propyl and N-Butyl Alcohols in Organism: Remarks on Products of Oxidation of Alcohols in Bichromate-Sulfuric Acid Mixture. S. M. Berggren.—p. 249.

Observations on Increased Resistance in Mated Animals to Toxic Agents. E. Agduhr.—p. 259.

Disturbance of Fat Metabolism Under Influence of Estrone: A Tumorous Fat Accumulation in Parametrium Experimentally Produced by Treatment with Estrone on Castrated Guinea Pigs. T. P. Störtebecker.—p. 268.

Hibernation of Hedgehog: Vitamin C Content of Some Organs. P. Suomalainen.—p. 272.

Influence of Static Muscular Work on Respiration and Circulation. E. Asmussen and E. Hansen.—p. 283.

*Fluctuations in Creatine and Creatinine Content of Blood During Athletic Training. P. Backman, V. Pirilä, T. Raekallio and I. Väänänen.—p. 304.

Creatine and Creatinine During Athletic Training.—Backman and his associates describe studies on the fluctuations in the creatine and creatinine content of the blood of four persons who underwent intensive training, which involved great muscular exertion. It was observed that, as regards the creatinine balance, the four persons represent two different types:

In two (B and D) the creatine balance was sensitive, for it reacted rapidly and strongly; whereas in the two others (A and C) it was more stable, so that the changes were weaker and slower. The authors think that this difference might be related to the difference in the body structure, for A and C were strong bodied, whereas B and D were of a rather slight build. In all four persons, a wavelike periodic fluctuation could be observed in the basic value of the total creatinine. In the two persons of the first type the periods were short; in those of the second type they were long. In the persons of the first type there were periodic changes also in the basic value of creatine; the direction of the change (increase or decrease) was the same as in the basic value of the total creatinine, so that fluctuations in the total creatinine were determined chiefly by the fluctuations in creatine, whereas the basic value of creatinine showed only few quantitative changes. In the second type of person the basic values of the creatine as well as of the creatinine changes without continuity. The basic value of the total creatinine reached its maximum rapidly in the persons of the first type but after a prolonged rest in the persons of the second type. In the persons of the first type its value was considerably higher before the beginning of the training than was the case in persons of the second type. In all four persons (more in the first than in the second type) the total creatinine and creatine values decreased during the individual exertion when the basic values were on the increase and they increased when the opposite was the case.

Zeitschrift f. Geburtshilfe u. Gynäkologie, Berlin

117: 1-176 (April 29) 1938

Malignant Chorionepithelioma. H. Heuck and R. Hanser.—p. 1.

Relations Between Growth of Cancer and Incretory Milieu: Biologic Investigations on Spontaneous and Inoculated Tumors of Mice. H. Baatz.—p. 64.

Results of Surgical Treatment of Descent and Prolapse of Female Genitalia. K. Hollstein.—p. 86.

Interstitial Tubal Pregnancy. H. Huber.—p. 94.

Edemas in the Newborn. H. Volz.—p. 131.

*Ascorbic Acid Content of Human Milk During Summer and Winter. H. Winkler and E. Heins.—p. 148.

Ascorbic Acid Content of Human Milk.—Following a review of reports in the literature on the vitamin C requirements of nursing mothers and their nurslings, Winkler and Heins report their own investigations on the seasonal fluctuations of the ascorbic acid content of human milk. Summarizing their observations, they say that the ascorbic acid (vitamin C) content of human milk increases from the first to the fourth or fifth day of the puerperal period, parallel to the transformation of colostrum into milk, colostrum having lower ascorbic acid values than does milk. During the remainder of the puerperium, the ascorbic acid value stays the same. In the course of the summer months it remains at about the same level regardless of a prolonged lactation. The ascorbic acid content of breast milk during the summer months was found to be between 4.6 and 6.6 mg. per hundred cubic centimeters. Usually the values were around 5.7 mg. per hundred cubic centimeters. The winter values were about one third lower than the summer values. They fluctuated between 2.9 and 5.2 mg. per hundred cubic centimeters. The mean was 4.1 mg. per hundred cubic centimeters. By the parenteral administration of ascorbic acid to nursing mothers, it was possible to increase the ascorbic acid content of their milk to 9 or 10 mg. per hundred cubic centimeters. This increase was induced more readily during the summer than during the winter. After the parenteral administration of ascorbic acid was discontinued, its content in the milk gradually decreased. During the winter months, the authors observed a deficit of vitamin C in nursing mothers which was not present during the summer months. They think that the presence or absence and the extent of the vitamin C deficit is largely dependent on the diet and on the season. This also explains the difference in results obtained by various investigators. They recommend that during the winter (November to April) pregnant and nursing women should receive vitamin C in addition to their food, so as to avoid a C hypovitaminosis. During the summer months (May to October), however, the vitamin C requirements will usually be met by a suitable diet.

Zentralblatt für Chirurgie, Leipzig

65: 897-1024 (April 23) 1938. Partial Index

- Disturbances After Stomach Resection. N. Guleke.—p. 898.
Injuries to Upper End of Radius. G. Magnus.—p. 904.
Retromedial Struma. H. von Haberer.—p. 906.
*Fibroplastic Appendicitis, Chronic Stenosing Terminal Ileitis and Non-specific Inflammatory Ileocecal Tumors. A. Låwen.—p. 911.
Results in Endarteritis Obliterans After Resection of Sympathetic Nerve and Ganglions. W. Röpke.—p. 916.
Effect of Pancreas on Mortality of Operations on Biliary Tracts. F. Bernhard.—p. 920.

Appendicitis, Ileitis and Inflammatory Ileocecal Tumors.—Låwen states that microscopic features of the entity he described in 1914 under the name of fibroplastic appendicitis are identical with those of terminal ileitis described in 1932 by Crohn, Ginzberg and Oppenheimer. He had stated in his description that fibroplastic appendicitis may involve the cecal wall and the terminal portion of the ileum and thus lead to a secondary terminal ileitis. The extensive literature on the subject of the etiologic relationship of the appendix to terminal ileitis permits the separation of the patients into three groups. In group 1 belong patients presenting at operation a terminal ileitis without the involvement of the appendix. In group 2 belong patients in whom the appendix had been removed a shorter or a longer time before the operation and in some of whom at least the appendix could not have been the primary cause. In group 3 belong patients in whom there are found inflammatory changes in the appendix in the course of an operation for chronic stenosing terminal ileitis. These alterations, however, not infrequently give the impression of being secondary rather than primary. The author concludes that the tumor forming chronic stenosing ulcerative or nonulcerative terminal ileitis and fibroplastic appendicitis and the analogous disorders of the ascending colon present an identical microscopic picture. They represent the same type of inflammation with a different primary localization. In a number of cases the relationship between terminal ileitis and the inflammation of the appendix cannot be demonstrated. There are cases of ileitis in which it is possible to establish the etiologic relationship to an acute appendicitis and a chronic terminal ileitis which had developed at a later period. A primary ileitis may involve the cecal wall, its mesentery and the appendix itself. The fibroplastic disease of the intestinal wall developing from the intestinal mucosa and involving the terminal ileum, the cecum and the ascending colon and giving rise to typical clinical entities is probably the same process as diverticulitis described by Graser, the postoperative chronic inflammatory tumors of the omentum described by Braun, the abdominal wall tumor described by Schloffer and possibly the peculiar, nonspecific chronic fibrous encapsulating peritonitis.

Zentralblatt für Gynäkologie, Leipzig

62: 849-896 (April 16) 1938

- *Diagnosis of Ovarian Dysfunction by Streak Curettage. K. H. Sommer.—p. 850.
Spastic Parametropathia with Spastic Constipation. M. Rodecure.—p. 859.
*Relations Between Ocular Tension and Pregnancy. P. Patat.—p. 868.
Menarche and Lactation. Emma Vittali.—p. 873.
New Device for Continuous Vaginal Irrigation. F. Hoff.—p. 876.

Diagnosis of Ovarian Dysfunction.—After pointing out that the great value of the microscopic examination of the endometrium of patients with ovarian dysfunction has been recognized by a number of authorities, Sommer cites some of the methods that have been recommended for this purpose. He says that at the clinics in Kiel and in Leipzig the so-called streak curettage has been found helpful. Reifferscheid uses a special streak curet, but the author simply uses a small curet. The procedure can be made without anesthesia. It requires merely a dilation up to Hegar 6. The curet is pushed up to the fundus, is pressed lightly against the anterior uterine wall and is drawn downward. Observations in the clinic and during ambulatory consultations revealed that even the repeated application of the streak curettage involves no injury to the patient. On the basis of case histories the author shows that the streak curettage provides valuable information about the ovarian function and thus helps in deciding the best treatment and in forecasting the probable outcome of the disorder. He

emphasizes, however, that for the determination of the presence or absence of a malignant tumor the streak curettage is inadequate.

Ocular Tension and Pregnancy.—Patat says that in a previous report (two years ago) he and his collaborator related observations on 151 cases in which studies were made during the different phases of pregnancy, delivery and the puerperium. Comparative tests on nonpregnant women of the same age revealed that the ocular tension of pregnant, parturient and puerperal women is usually reduced. In those women in whom the values were definitely reduced during pregnancy, the author renewed the test one or two years after delivery. In this paper he gives a tabular report of twenty-seven women who were reexamined. The table clearly demonstrates that the ocular tension of the same person is usually lower during the processes of gestation than is the case one or two years after delivery. Discussing the possible cause of the ocular hypotension during pregnancy, the author suggests first that the acidosis of pregnancy might play a part, pointing out that a lowered ocular tension has been observed during other processes that are accompanied by acidosis, such as diabetic coma. Other factors that might be involved are reduction in the osmotic pressure, chemical changes in the blood or changes in the endocrine function. A complete explanation has not been found as yet.

Wiener Archiv für innere Medizin, Vienna

32: 159-214 (April 30) 1938

- Studies on Objective Factors of Hunger and Satiety. J. Monauni.—p. 159.
*Hypophysis and Water Exchange. P. Wermer.—p. 189.

Hypophysis and Water Exchange.—Wermer discusses recent advances in the knowledge of the pathogenesis of diabetes insipidus, giving special attention to the significance of the anterior lobe of the hypophysis in the pathology and physiology of the water exchange. After pointing out that the significance of the anterior hypophysis in diabetes insipidus was indicated two decades ago by the observations of von Hann, he cites recent observations, particularly by American authors, which likewise indicate that the anterior lobe of the hypophysis does play a part. On the basis of these reports in the literature and of his own experiments and observations, he reaches the conclusion that a substance with strong diuretic action can be extracted from the anterior lobe of the hypophysis. This substance is contained in that fraction which also contains the growth hormone. There are two types of diabetes insipidus: that caused primarily by the posterior lobe of the hypophysis and that caused by the anterior lobe of the hypophysis. In both types there exists a disproportion between the diuretic hormone of the anterior lobe of the hypophysis and the anti-diuretic hormone of the posterior lobe of the hypophysis. The deficiency in secretion of the posterior lobe of the hypophysis may be caused by a destruction of the posterior lobe or by an impairment of its innervation. An excess of hormone of the anterior lobe of the hypophysis may be caused by a basophil adenoma or during pregnancy by a transformation of the hypophysis which is elicited by the genital glands. Destruction of the anterior lobe of the hypophysis in the presence of an unimpaired posterior lobe produces oliguria; however, if it is accompanied by destruction of the posterior lobe, the development of diabetes insipidus is prevented.

Vrachebnoe Delo, Kharkov

20: 177-240 (No. 3) 1938. Partial Index

- General Laws in Neurology of Infections. A. T. Geymanovich.—p. 181.
Symptomatology of Acute Myelosis. A. N. Sokolov.—p. 191.
Symptomatology of Grave Anemias. M. K. Bukshpan.—p. 195.
*Aplastic Anemias. G. A. Rakochi.—p. 197.
Symptomatology of Essential Thrombopenia. F. P. Patushinskaya.—p. 207.
Chemotherapy of Sepsis. L. I. Gifter.—p. 209.

Aplastic Anemias.—The great majority of blood diseases may be regarded, according to Rakochi, as a reaction on the part of the hemopoietic organs to various irritants. Pernicious anemia is one of the types of reactive processes. Sepsis not infrequently appears to be the cause of such reactions, capable of producing alterations in the blood resembling those of per-

nicious anemia. Such cases are to be regarded as a syndrome of pernicious anemia accompanying sepsis. As is well known, liver therapy is most effective in this type of anemia. Its effect in other pernicious anemia syndromes is not nearly so reliable. There exist a number of syndromes of pernicious anemia with known etiology, such as anemia of pregnancy, of helminthiasis or of sepsis. Pernicious anemia may run its course as a regenerative type, either hypoplastic or aplastic. Aplastic anemia may begin as such or it may develop from a regenerating type. The etiologic factors are variable, sepsis being among the more frequent. Hemolytic processes may be present or absent, depending on the etiologic causes. The author regards aleukia as a general concept. Various etiologic factors may give rise to a typical picture of aleukia; among these sepsis is a frequent cause. Cases of aleukia associated with the involvement of erythropoiesis belong in the group of aplastic pernicious anemias.

20: 241-320 (No. 4) 1938. Partial Index

- Latest Clinical Data Regarding Vitamins. B. A. Egorov.—p. 249.
Role of Sodium in Development of Edema. S. D. Reyselman.—p. 255.
Parallel Studies of Gastric Contents with Thick Tube and by Fractional Thin Sound. M. I. Khurgin and A. Ya. Reznik.—p. 261.
*Nathan's Reaction in Tuberculosis. T. V. Braginskaya.—p. 265.
Bilirubin Reaction of Blood of Healthy Persons and of Those with Hepatic Disease as Influenced by Diathermy. A. G. Martynuk.—p. 269.
Rheumatism and Cardiac Invalidism. I. B. Katsnelson and K. B. Kheifets.—p. 271.

Nathan's Reaction in Tuberculosis.—Braginskaya reports results with the use of a test proposed by Nathan and Kallos in 1931. The technic of the test is as follows: A piece of gauze 1 cm. in diameter was moistened in old tuberculin and applied to the healthy skin on the flexor surface of the forearm. The edges were secured to the skin by some adhesive substance. Clear bouillon was used for control. The dressing was removed twenty-four hours later and the reaction was observed for the next five or six days. When positive, the typical reaction is characterized by the appearance of small vesicopapular lesions on a normal or somewhat hyperemic base. The lesions begin to disappear from two to three days later. On the basis of experience in 184 patients, the author concludes that the reaction of Nathan may be included among the sensitive and specific reactions in tuberculosis. Both general and focal reactions were absent. Positive reaction was observed in active cases only. The reaction is more pronounced and its incidence is greater in cases of tuberculosis of the skin, although it gives a considerable percentage of positive reactions in tuberculosis of other systems. The experience of the author is not in agreement with the conclusions of Nathan and Kallos, who consider that the test has a selective affinity for tuberculosis of the skin. The test in children does not differ from that in adults. The reaction may be negative in grave cases of tuberculosis accompanied by marked exhaustion, as well as in the stage of recovery.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

82: 2001-2092 (April 23) 1938. Partial Index

- Experiences with Peg Treatment in Median Fracture of Neck of Femur with Aid of Direction Apparatus of Valls. I. Boerema.—p. 2009.
Measurement of Diameter of Erythrocytes and Standardization of Apparatus of Pijper. E. P. Snijders and T. Kiem Bok.—p. 2018.
*Fever Therapy of Gonorrheal Conjunctivitis by Means of Intravenous Injection of Cholera-Typhoid Vaccine. H. G. Hofstee.—p. 2028.

Therapy of Gonorrheal Conjunctivitis.—Hofstee says that whereas in the Netherlands gonorrheal conjunctivitis is practically disappearing, the condition is still comparatively frequent in the Dutch East Indies. He discusses observations on patients with gonorrheal conjunctivitis who came for treatment to the Wilhelmina Hospital in Bandung (Java). The material comprises in all about 900 eyes that were treated in the years between 1929 and 1936. The majority of patients were adults, but there was also a considerable number of infants with gonorrheal conjunctivitis. The treatment consisted in intravenous injections of 0.1 cc. of cholera-typhoid vaccine or in intramuscular injections of milk or in measures such as irrigations with solution of potassium permanganate and treatment with silver nitrate. Approximately 50 per cent of the patients with gonorrheal conjunctivitis had a more or less severe involvement of the cornea. The author thinks that this is partly due

to the fact that the patients are hospitalized rather late, and partly to the poor condition of the cornea as the result of mixed infections (trachoma) and (latent) A avitaminosis. Discussing the efficacy of the different treatments, the author says that the injections of cholera-typhoid vaccine effect cure on the average in nine days, the milk injections in eleven days and the other measures in twelve days. He thinks that the intravenous injection of typhoid-cholera vaccine is the best form of fever therapy for gonorrheal conjunctivitis.

Hospitaltidende, Copenhagen

81: 89-116 (Jan. 25) 1938

- Case of Cancer and Tuberculosis in Same Patient. P. Møller.—p. 89.
*Schmorl's Nodules. K. Overgaard.—p. 102.
Digitalis Bradycardia and Blood Pressure. N. A. Nielsen.—p. 111.

Schmorl's Nodules.—Overgaard says that while Schmorl's nodules, often seen in roentgenograms, usually give no symptoms, closer attention to their eventual clinical significance is desirable. The disorder may presumably cause subjective symptoms and may play a part in the development of a deforming spondylitis and probably also in the development of a kyphosis of adolescence (Scheuermann's disease).

81: 145-172 (Feb. 8) 1938

- *Review of Recent Research on Leukosis. J. Engelbreth-Holm.—p. 145.
*Nervous Complications in Epidemic Parotitis: Meningoradiculitis Basalis Parotidea. K. G. Fuhrmann.—p. 159.
Recurrent Colic After Gallstone Operations. S. Müller.—p. 168.

Leukosis.—According to Engelbreth-Holm, investigators agree that leukoses in animals, especially in chickens and mice, are analogous to leukoses in man and that leukoses are to be regarded as tumor formations. The observation of several cases of lymphatic leukoses in closely related persons suggests the possible presence of a hereditary constitutional factor. Investigations in inbred mice clearly show hereditary factors to be most important in the origin of leukoses in animals. The receptivity of mice to implanted leukoses depends on hereditary factors transmitted as a dominant characteristic; the occurrence of spontaneous leukoses depends in part on hereditary dispositions of a far more complicated kind and does not depend on a dominant characteristic. The author states that while leukoses, at all events those with a rapid course, have by some been assumed to be due to infection, undoubtedly a complicating secondary infection often sets in in true leukoses with a rapid course; a positive result on cultivation of bacteria from the blood affords no evidence as to the infectious nature of leukoses. At present the theory of a virus as the cause of leukoses in mammals is considered one of the most plausible theories, but it is not established. Investigations have shown that the tumor-producing viruses are not independently living organisms. The greater frequency of leukoses in man in winter than in summer has not yet been explained, and similar unexplained conditions prevail in chicken leukoses. While recent investigations have given the clinic new and valuable adjuvants for the diagnosis of leukoses, therapy continues to be only palliative. Stephens and Lawrence propose treatment with doses of arsenic, increasing to beginning intoxication and then with continued sub-toxic doses. There is no recent confirmation of the reported improvement on treatment with ascorbic acid. Irradiation does not prolong the patient's life but leads to significant improvement in the condition.

Epidemic Parotitis.—In Fuhrmann's case the epidemic parotitis was accompanied by a defined meningitic lesion localized to the base of the cerebrum. He advises neurologic examination in all infections which often give benign meningitis. In later neurodisturbances the history then allows establishment of the pathogenesis in radiculomeningitis and circumscribed serous meningitis and perhaps also in the frequent cases of "changes in the spinal fluid," in which the subjective symptoms do not point to the nervous system or merely suggest the clinical picture of "neurasthenia" or "slight depression," and the most careful objective examination reveals no sign of organic nervous disorder. Because of the tendency in epidemic parotitis to nervous complications, especially benign, often latent meningitis, he would advise examination of the spinal fluid in every case of epidemic parotitis.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 111, No. 2

COPYRIGHT, 1938, BY AMERICAN MEDICAL ASSOCIATION
CHICAGO, ILLINOIS

JULY 9, 1938

SOME UNSOLVED PROBLEMS OF TUBERCULOSIS

JAMES ALEXANDER MILLER, M.D.
NEW YORK

Physicians are all aware of the great progress in knowledge concerning tuberculosis which has occurred since the discovery of the tubercle bacillus in 1882. This, combined with the further recognized fact that there has occurred a notable decrease in the mortality and morbidity from tuberculosis in the greater part of the civilized world, has led to a feeling of satisfaction which is based on the assumption that the problems of this disease have been solved and that, in consequence, tuberculosis is in a fair way to be under definite and permanent control.

A critical analysis of the situation, however, reveals the somewhat disconcerting fact that while the very extensive researches have undoubtedly greatly increased knowledge, they have at the same time raised up many previously unsuspected problems concerning which there exist uncertainty and wide differences of opinion.

As some of the still unsolved problems concern the fundamental concepts of the pathogenesis and epidemiology of the disease, and as permanent control of tuberculosis depends on the soundness of such concepts, it seems desirable to review some of the disputed questions in the interest of progress in thinking, even though it be at the expense of complacency.

When one begins to look for them, one finds so many of these problems that it is impossible at this time to attempt the discussion of more than a few of those which are of especial interest and importance.

INFECTION AND CONTAGION

For centuries laymen have believed in the contagiousness of tuberculosis. Quarantine against it was established in Naples in 1751 and in Spain in 1782. Laënnec in 1817 noted the fact that nurses in contact with patients with phthisis rarely acquired the disease, although he did note that under certain conditions the disease might be communicable. Villemin, on the other hand, in 1853 based his notable animal experiments, which first proved the infectiousness of tuberculosis, on the observation that human phthisis was apparently communicable under crowded and untoward living conditions. In 1873, however, the elder Flint¹ wrote: "The doctrine of the contagiousness of the disease has now as hitherto its advocates, but the general belief of the profession is in its non-communicability."

Then came the discovery of the tubercle bacillus by Koch and Baumgarten in 1882, and as the enthusiasm engendered by the new knowledge of bacteriology was at that time in full flood it was natural that the profession and the laity alike should include tuberculosis with the other bacterial diseases which are communicable and contagious.

Thoughtful students, however, became increasingly impressed by the notable differences in the behavior of tuberculosis as compared with other infections. No one longer doubted that it was infectious or that the infection was communicable, but there were many inconsistencies in the relationship between the secondary phthisis and the primary source of infection.

Tuberculin surveys (Hamburger and Monti) a generation ago demonstrated that tuberculous infection was an almost universal phenomenon in large cities.

Postmortem studies (Naegeli, Burkhardt, Scheuermann, Huebschmann, Pagel) showed that in the overwhelming majority of adults there existed residues of a primary infection and also secondary lesions, especially in the lungs. While the numbers so infected are definitely less now than at the time of these original studies, it is still true that a large majority of all people are infected and yet only 1 or 2 per cent of adults contract phthisis.

It thus became obvious that other factors besides infection must enter into the problem to explain why disease develops in some persons and not in others.

RESISTANCE

Numerous clinical as well as experimental observations (Koch, Roemer and others) established the fact that the body offers an astonishing degree of resistance to its invasion by tubercle bacilli.

That in some instances this resistance is natural, constitutional, or inherited is evidenced by the fact that many young children intimately in contact with tuberculous infection not only do not contract the disease but may even remain uninfected, as indicated by the lack of reaction to tuberculin. In several recent reports on extensive studies of a large dispensary material, Bezançon² emphasized that 18 per cent of children living in an infected environment do not react to tuberculin. Similar observations were made in an excellent epidemiologic study in a French village by Van den Eeckhout,³ who obtained in 11 per cent of over 500 children a negative reaction to tuberculin in spite of definite exposure.

2. Bezançon, F.: Proceedings of the Tenth International Tuberculosis Congress: Lisbon, 1937; Bull. Internat. Union Against Tuberculosis 14: 518 (Oct.) 1937.

3. Van den Eeckhout, H.: Contribution à l'étude de la primo-infection tuberculeuse parmi la population scolaire de la plaine, Rev. de la tuberc. 3: 1029 (Nov.) 1937.

From the Tuberculosis Service of Bellevue Hospital.

Read before the New York County Medical Society, May 23, 1938.

1. Flint, Austin: Practice of Medicine, Philadelphia, H. C. Lea, 1873.

In the great majority of instances, however, the resistance appears to be acquired and dependent on a previous and usually non-disease-producing infection. In previously infected persons either no actual disease occurred or, if it did, it was definitely altered into a chronic localized disease usually situated in the lungs, i. e., chronic phthisis.

In contrast to these cases the differences in the behavior of the disease in noninfected soil (infants and virgin races) were most striking. Here the tuberculosis was an acute, rapidly disseminating infection throughout the body, with no tendency to localization. The situation was well summarized by Bushnell,⁴ in 1920, as follows:

The belief that consumption is not infectious was based upon an enormous experience, but very naturally seemed erroneous when the infectious agent became known. The study of many years was required to show that the belief contained an element of truth, that consumption is not infectious for those who have already a tuberculous infection, even though it be occult.

The error of our fathers lay in failing to appreciate the fact that consumption, though indeed not infectious for the civilized adult, was sowing beautifully on every side the seeds of death for the child unprotected by a previous infection with tuberculosis. The error of modern times is to deny the protective influence of tuberculous infection against renewed infection from without. Thus is solved the riddle of the centuries. Our fathers saw one side of the shield, we have concentrated our attention too much on the other.

That this explanation, however did not completely "solve the riddle of the centuries" was evidenced by the fact that many previously uninfected persons escaped even when exposed and that many previously infected persons in the course of time contracted active phthisis.

For some of those in the first category the explanation of natural resistance is advanced. That this natural resistance may be inherited, not as specific resistance itself but as an increased resistance in the children of those who have acquired resistance, is a plausible theory recently supported by Doerr⁵ in spite of the fact that it runs counter to the generally accepted biologic law of the nonheritability of acquired characteristics. That it may be an inherent constitutional quality not specifically defined is held by many, and it appears certain that much will be heard in the near future concerning constitutional factors in tuberculosis as well as in many other diseases.

In both categories, persons primarily infected and those uninfected, the quantity and the frequency of infection appear determining. Even in the susceptible persons an insufficient and infrequent dose of infection will not produce disease, while in those comparatively resistant because of a previous infection, a sufficiently large and frequently repeated dose will overcome any such resistance. That this acquired resistance may be enhanced by the cumulative effect of many repeated small infections is evidenced by the behavior of certain groups in which such infections have occurred; e. g., the Jews in Europe. In these groups, not only is the mortality low but when the disease occurs it is usually of a chronic, nonprogressive type. That a considerable amount of such resistance may be acquired within two generations has been shown by Ferguson's⁶ careful study of a Canadian Indian tribe.

That this acquired resistance may be lost or seriously impaired has been equally well demonstrated. Evidence is accumulating that somewhat frequently sensitiveness to tuberculin may be evanescent when the infection is slight and may disappear when latent lesions become entirely healed. In such cases, while the infection does not behave like that in virgin soil, there is a diminished or altered resistance to reinfection. It is well known that resistance to tuberculosis may be impaired during certain infectious diseases (e. g., measles) or because of other unfavorable factors (such as malnutrition, the changes of puberty, pregnancy, or general economic and social stress) and that reinfection under such conditions is more likely to result in disease.

In general there is considerable evidence that resistance, both natural and acquired, has an important role in modifying the liability to disease after exposure to infection.

THE PATHOGENESIS OF PHTHISIS

My discussion now brings me to one of the most actively debated questions concerning tuberculosis: How does phthisis develop? Is it caused by direct contact with persons in the infectious stage through the inhalation of bacilli, or is it dependent on the activation of latent foci caused by the previous mobilization of bacilli to the lungs from the original primary lesion due to a previous, often remote, first infection?

The lines are fairly well drawn between physicians who believe in the exogenous origin and those who hold that evidence is in favor of the endogenous origin.

At first glance the first hypothesis, of direct cause and effect, appears plausible, and the early studies of Cornet and Pfuegge on the possibilities of droplet and dust modes of infection, respectively, aided in the crystallization of this theory. In recent times Aschoff⁷ and Puhl have supported this contention and claimed the possibility of the accurate pathologic recognition of characteristic foci of exogenous reinfection; this possibility, however, has been disputed and apparently disproved by Loeschke,⁸ Pagel⁹ and Grethmann.¹⁰

In this country Opie¹¹ has been the outstanding exponent of this theory, basing his opinion on his extensive epidemiologic and statistical studies. His main conclusions on this point, as indicated by his various reports, may be briefly summarized as follows:

1. Phthisis is produced by superinfection (exogenous reinfection) or by first infection of the lungs in adolescent or adult age.
2. Phthisis is a disease spread particularly by household contagion, which is even more dangerous to adults than to children.
3. As the severity of the disease is proportionate to the intensity and the prolongation of contact, the differences in dose of infection explain the individual variations in the disease.

Any conclusions based on such extensive studies as those of Opie deserve the most serious consideration. Yet a number of questions have been raised against his conclusions:

1. Why, if the inhalation of bacilli causes the disease, are not evidences of numerous such areas seen? As a

7. Aschoff, Ludwig: *Lectures on Pathology*. New York, Paul B. Hoeber, Inc., 1924.

8. Loeschke, H.: *Die Lungentuberkulose des Erwachsenen*, Med. Klin. 25: 173 (Feb. 1) 1929.

9. Pagel, W.: *Pathologische Anatomie der hematogenen Streuungstuberkulose*, *Ergebn. d. ges. Tuberk.-Forsch.* 5: 231, 1933.

10. Grethmann, W.: *Personal communication to the author.*

11. Opie, E. L., and others: *Studies on Tuberculosis*, *Am. J. Hyg.* 22: 539, 565, 644 (Nov.) 1935; 23: 493, 530 (May) 1936.

4. Bushnell, G. E.: *A Study in the Epidemiology of Tuberculosis*. New York, William Wood & Co., 1920.

5. Doerr, R.: *Die erblichen Grundlagen der Disposition fuer Infektionen und Infektionskrankheiten*, *Ztschr. f. Hyg. u. Infektionskr.* 110: 635, 1937.

6. Ferguson, R. G.: *Some Light Thrown on Infection, Resistance and Segregation by a Study of Tuberculosis Among Indians*, *Bull. Internat. Union Against Tuberculosis* 12: 107, 1935.

matter of fact, instances of the existence of more than one original primary infection are extremely rare.

2. Why, when the undoubted inhalation lesions of first infection are practically invariably in the middle or peripheral zones of the lungs, are the lesions of phthisis so regularly in the apical regions?

3. What mechanism serves to direct the subsequent infection away from the obviously direct route taken by the first infection, up to a region so difficult of access?

4. It having been proved that only a minimal amount of infection can reach the terminal bronchi and alveoli and that such minimal doses rarely if ever produce progressive phthisis, if the dose is the determining factor are not the possibilities of large doses reaching any particular area much greater by spread from the latent lesions through the lymph and the blood stream than by inhalation?

5. It is known that the primary inhalation lesion in the lung rarely progresses directly to phthisis. Why should the presumed subsequent inhalation lesions behave so differently?

6. It has been definitely proved that in the great majority of adults there often exist, in addition to the primary lesion, numerous secondary lesions, most regularly in the apexes of the lungs, and that these lesions harbor viable tubercle bacilli for an indefinite number of years. Can these apical lesions be ignored as the origin of apical phthisis?

7. Granted that active pulmonary disease is much more frequent under conditions of intense and prolonged contact, is there not some other explanation possible than that of the production of new direct inhalation lesions?

Physicians who are convinced of the validity of these objections to Opie's conclusions are advocates of the theory of the endogenous origin of phthisis. In the past decade and more their number has proved to be very large and includes pathologists and clinicians in many countries.

In general it would appear that the majority of careful students of tuberculosis now accept this explanation of the usual origin of phthisis and either reject the possibility of its origin from direct exogenous reinfection altogether or recognize its possibility as a comparatively rare exception to the rule.

Endogenous Phthisis.—The sequence of events in the development of phthisis from endogenous sources of infection was first most logically presented by Ranke. Beginning with the pathologic conception of the primary complex, with its pulmonary and lymphatic poles, as first discussed by Parrot, Kuss and Ghon, Ranke described the postprimary dissemination from the lymphatic pole through the lymph and blood stream, with numerous deposits in various organs but especially in the apical and subapical zones of the lungs, and from these foci the development when the conditions are favorable of active organic phthisis. From this point the disease spreads no longer by the lymph and blood stream but by the air passages, the so-called method of bronchogenic spread. This mode of development from such latent inactive lesions has been designated by Ulrici¹² as "exacerbation phthisis." Its occurrence depends either on the lowering of resistance, as I have already indicated in my discussion of that subject, or on the exacerbating effect of considerable exposure to

new exogenous infection in developing a hypersensitiveness, as will be discussed later in the consideration of the problem of allergy. This has been designated by Redeker¹³ as the "trigger action" of superinfection.

It is to be emphasized that these latent foci are a most common finding by modern radiographic methods, that while they always represent potential possibilities for phthisis they are not in themselves phthisis and that, in fact, a very small percentage of them ever do develop into phthisis. Consequently, while they deserve recognition and periodic radiographic reexamination and indicate supervision of the subject, they by no means always need active treatment. The discovery of the foci and the proper management of the subject present one of the great unsolved problems of tuberculosis today.

Another important problem is that of the danger of infection to young adults who have previously been uninfected. The interest in this group has been largely concentrated on the problem of nurses and physicians.

Heimbeck and Wallgren in Scandinavia and Edwards in England have made special studies of these groups, and in this country the work of Myers and his associates has received wide attention. Myers¹⁴ stated:

With approximately 100 per cent of the students contaminated with tubercle bacilli during the course of their training, one must expect the incidence of demonstrable lesions, which subsequently develop, to be much higher than in a general population, in which not more than from 10 to 30 per cent of the young adults have been infected with tubercle bacilli. Where actual observations have been made this has been found to be true.

He said further:

While we have been priding ourselves over the marked decrease in the incidence of positive tuberculin reactors among children and young adults throughout most of this nation, we have tolerated a situation that has permitted students of nursing and medicine to become infected with tubercle bacilli at a rate no less than probably existed in the general population a century ago.

That this situation represents to him a real tragedy is evidenced by his statement:

We know that once the primary complex has been allowed to develop, as manifested by a positive tuberculin reaction, there is no treatment of any avail; that is, the condition is beyond recall. Immunity does not develop sufficient to destroy the tubercle bacilli. No treatment that we know, such as long periods of strict bed-rest or even collapse therapy, destroys the tubercle bacilli in the lesions of the primary complex. Moreover, we have no practical method of permanently desensitizing the tissue of such persons.

Heimbeck and Wallgren are not so pessimistic and have been experimenting with BCG vaccination in these groups. A report on the ultimate results of their experiments will be interesting. Possibly, as will be discussed in my consideration of allergy, a better appreciation of those who are more liable to serious effects from considerable exposure to infection may some day be obtained from studies of their various allergic states, and possibly in this way provision may be made for their more adequate protection.

13. Redeker, F.: Das Problem der Reinfektion vom klinischen Standpunkt aus; in Engel, Stefan, and Pirquet, Clemens: Handbuch der Kinder-tuberkulose, Leipzig, Georg Thieme 1: 261, 1930.

14. Myers, J. A.: The First-Infection Type of Tuberculosis, *Am. Rev. Tuberc.* 34: 317 (Sept.) 1936. Myers, J. A.; Diehl, H. S.; Boynton, Ruth E., and Trach, Benedict: Development of Tuberculosis in Adult Life, *Arch. Int. Med.* 59: 1 (Jan.) 1937; The Latent or Smoldering Stages in Tuberculosis, *Am. Rev. Tuberc.* 36: 355 (Sept.) 1937; Tuberculous Pulmonary Infection in Hospital Personnel, 33d Annual Meeting of the National Tuberculosis Association, 1937, p. 309.

12. Ulrici, H.: Die Lungentuberkulose der Erwachsenen im Gesamtbild der Tuberkulose, *Bull. Internat. Union Against Tuberculosis* 13: 477, 1936.

Apparently, although he has not categorically so stated, Myers believes in the endogenous spread of lesions to the lungs from the primary complex but considers such lesions in the same serious category as definite phthisis. Apparently also he believes that the only real solution eventually is a community not only completely tuberculin negative but free from opportunities for infection.

To many, as to Bushnell, this seems hardly a feasible objective and moreover one that is fraught with dangers if the process of acquiring racial resistance through habituation to occasional small doses of infection is interrupted. Also, many do not share Myers' great dread of first infections, for the reason that only a small percentage of them ever develop into phthisis and that for many persons they apparently afford a considerable measure of protection against the practically unavoidable occasional contacts with heavier doses which occur in modern urban communities, as well as against the even heavier doses that may arise from the intermittent endogenous discharges of bacilli from existing lesions.

While Opie expressed agreement with Myers' concept of the special danger from first infections in young adults, other workers, such as Schroeder¹⁵ and Herlitz,¹⁶ have come to opposite conclusions.

Under such conditions of reasonable doubt concerning the dangers involved it would appear desirable that further studies should be made before such sweeping conclusions as those of Myers are reached.

Summarizing the present state of knowledge of the problems of infection, it may be stated that:

1. Infection is transmitted from one human being to another.
2. Opinion differs as to whether this infection is the direct cause of phthisis in the lungs, but the majority of workers now believe that it is not.
3. The development of phthisis requires something more than infection.
4. This factor in the majority of cases is the exacerbation of preexisting lesions.
5. The exacerbation may be caused by superinfection from the outside but is more especially dependent on variation in the resistance of the body to the infection, whether it is exogenous or endogenous.
6. There exists a long period of latency before the lesions become exacerbated, and in the large majority of cases they never develop into phthisis or clinical disease.
7. Differences of opinion exist as to the danger of first infection in adults as compared with that of the exacerbation of previously existing lesions.

ALLERGY AND ANERGY

The practical meaning of allergy and anergy with regard to tuberculosis is the sensitiveness or lack of sensitiveness to tuberculin.

In my discussion of acquired resistance I noted the effect (allergy) of the changed reaction following infection on the behavior of the tissues to subsequent infection and that this change apparently affords a certain degree of protection against the development of disease. As this is an immunobiologic reaction it has led to considerable discussion and confusion of thought concerning allergy and immunity. It is now a generally accepted fact that in the human being there is no true

immunity to tuberculosis, that a sufficient dose of infection will always cause disease but that, on the other hand, there is a great variation between persons as to the dose necessary to produce this result. It is also known that allergy and immunity are distinct characteristics although they have a definite relationship to each other. This has been expressed by the formula that allergy is associated with a relative immunity. As this is by no means always true, if by immunity one means protection against disease, and as the whole subject is a very complex one by no means completely understood, it would appear wiser and more nearly in accord with known facts if, at least in clinical thinking, one used the term resistance and discarded the term immunity altogether.

The Significance of Reactions to Tuberculin.—The question concerning allergy which clinicians wish to have answered is What is the significance of a positive or a negative reaction to tuberculin in a given case, and if the reaction is positive what significance may be attached to a mild as opposed to a marked reaction? Epidemiologists are greatly interested also in the mass significance of the results of tuberculin surveys, now very numerous, which show such varied results in different communities. A positive reaction to tuberculin certainly indicates a previous tuberculous infection. A negative reaction, or a state of anergy, as Hayek termed it, may or may not indicate absence of such infection. In infants and young children a negative reaction is practically positive evidence of lack of such infection. This is essentially true of older children and adults in nontubercularized communities (virgin soil).

It has long been well known that allergy is lost in the terminal stages of tuberculosis, during some of the infectious diseases (measles) and also during depressed physical conditions from various causes. Also, it is definitely known that sensitiveness to tuberculin disappears when tuberculous lesions become completely healed. It is less generally recognized that after a considerable number of mild infections the resulting allergy is evanescent and that sometimes the lesions themselves may entirely disappear. Paretzky¹⁷ recently reported the actual observation of loss of allergy in eighty cases of arrested pulmonary tuberculosis. Neal¹⁸ claimed this to be a sign of arrest under treatment by pneumothorax. In rare instances loss of allergy within a short time after first infection in children has been observed.¹⁹ Though the patient reacts negatively to tuberculin, should reinfection occur his behavior is not that of virgin soil but rather that of a mildly allergic person. This is of importance in assessing the epidemiologic significance of negative reactors and also as an explanation of some of the apparently primary lesions in adults which have recently been reported. That allergy to tuberculin may fade out after mild tuberculous infection was supported by the experimental data of Calmette²⁰ and Guérin. The idea has since been considered by a number of clinical observers (Kristenson,²¹ Troisier and his co-workers,²² Courcoux

17. Paretzky, M.: The Diagnostic Application of High Doses of Tuberculin. *Am. Rev. Tuberc.* 36: 313 (Sept.) 1937.

18. Neal, J. R.: Allergy as a Guide in Terminating Artificial Pneumothorax. *Am. Rev. Tuberc.* 32: 326 (Sept.) 1935.

19. Brailley, Miriam: Factors Influencing the Course of Tuberculous Infection in Young Children. *Am. Rev. Tuberc.* 36: 347 (Sept.) 1937.

20. Calmette, Albert: *Tubercle Bacillus Infection and Tuberculosis*. Baltimore, William & Wilkins Company, 1923.

21. Kristenson, A.: Contribution to the Knowledge of Tuberculous Infection Among Student Nurses. *Acta tuberc. Scandinav.* 7: 1, 1933.

22. Troisier, J., Bariety, M., and Nico, P.: Tuberculose pulmonaire du type "adulte" après virage de la cuti-réaction tuberculinique chez de jeunes adultes. *Bull. et mém. Soc. méd. d. hôp. de Paris* 53: 890 (June 21) 1937.

15. Schroeder, E.: Tuberkulose und Schule. *Ergebn. d. ges. Tuberk. Forsch.* 8: 521, 1937.
16. Herlitz, Gillis: Studien über die Prognose der ehkulten Kinder-tuberkulose. *Acta paediat. (supp.)* 19: 1-157, 1937.

and his associates,²³ and Irimescu and Nasta²⁴), who noted that the processes developing on exposure in these persons are unlike either primary or phthisical ones.

A positive reaction to tuberculin represents a state of allergy and indicates a previous tuberculous infection but of course not necessarily the presence of active disease. In fact, in the large majority of reactors the lesions which may still exist are entirely latent and inactive. I have already indicated that this affords a certain degree of protection against reinfection. That the allergic state may be a two-edged sword has also been indicated. The situation has been admirably summarized by Topley²⁵ as follows:

There is a good deal of evidence derived from clinical and radiographical observations to suggest that, though allergy serves as a valuable protective mechanism against reinfection in normal persons with inactive latent foci of tuberculosis, in patients suffering from the disease or in persons with latent active foci, it may have the reverse effect. Such persons, when exposed to reinfection, of either exogenous or endogenous origin, react much more strongly than normal persons. A severe inflammatory disturbance is liable to develop around the active focus, and lead to general toxemia and extension of the local lesion.

If this conception is correct it will be seen that there is no simple relationship existing between allergy and the liability to develop clinical tuberculosis. The relationship is dependent on a number of variable factors, among which the state of the lesions, the general environmental conditions and the risk of exposure to infection are probably three of the most important. If we are to gauge the liability of individual persons to develop clinical tuberculosis, a knowledge of their sensitivity to tuberculin is clearly insufficient. In addition, we shall want to know the number, extent, and degree of activity of all tuberculous foci in the patient's body, together with his general environmental conditions and mode of living. Whether such knowledge, if obtained, would enable us to assess, in terms of probability, the likelihood of tuberculosis developing, we are not in a position to say, but investigations are now on foot which it is hoped will provide an answer to this question—at any rate so far as pulmonary tuberculosis is concerned.

As long ago as 1923 Redeker emphasized that exogenous superinfection tends to exacerbate old foci and bring about dissemination and endogenous metastasization from them. This assumption has since been accepted by a number of workers.²⁶ This is the "exacerbation phthisis" of Ulrici, to which reference has already been made and which is now ascribed to the effect of hypersensitization.

The Intensity of the Reaction.—As to the significance of the intensity of the reaction to tuberculin, although some knowledge exists, it is far from complete. There is reason to believe that the intensity depends largely on the intimacy of contact, involving more frequent exposures to infection as well as larger doses, and also on the time that has elapsed since exposure.

For example, in studies with children Boyd²⁷ found that 48.27 per cent of those in whom the source of infection was found gave a positive reaction to a 1:1,000 dilution and 16.27 per cent a positive reaction to a

1:100 dilution. He said: "The source of infection was found for 60.87 per cent of those children with 3- and 4-plus reactions, and for only 14.28 per cent of those with 1- and 2-plus reactions" and concluded that "the character of the skin reaction is a better index of the intimacy of contact than is the presence of a definite lesion in the x-ray."

From observations on children Schuman²⁸ concluded:

The more recent the exposure the greater is the reaction to tuberculin. It is not definite whether the time-interval dates from the period of the primary infection or from the period of exposure to positive sputum.

The degree of sensitization to tuberculin may be measured either by the intensity of reaction to a standard dose or by the size of the dose required to produce a definite reaction. Recognizing the fact that intimacy of contact may greatly intensify the reaction, Long and his associates²⁹ recommended that under such circumstances the more potent strength of their purified protein derivative be avoided. In this connection it may be stated that this derivative represents a great advance in the preparation of tuberculin and that its general use will tend to extend more accurately our knowledge of the significance of varying reactions.

That hypersensitivity to tuberculin not only may indicate recent or severe exposure but may involve a great risk of the development of "exacerbation phthisis" is indicated by reports such as those of Wilcocks³⁰ in South Africa, who stated:

As regards Tanganyika Territory, it can be stated that in those communities where opportunity for contact is likely to be greatest, we find . . . first, the highest percentage of positive reactors to tuberculin; second, the strongest reactions; and, third, the greatest numbers and proportions of recorded disease. . . . It seems logical, therefore, to think that continuous exposure to exogenous reinfection tends to produce, first, sensitivity, then hypersensitivity, and finally disease.

As exposures to infection as well as individual resistance vary greatly at different times, it is not surprising to find that the sensitivity to tuberculin varies greatly in the same person. The advantage that may be taken of this fact as an indication of the occurrence of a new infection or of the danger of active disease has not been fully explored, but it appears certain that periodic tests with tuberculin are essential to the understanding of the individual case, especially from an epidemiologic point of view, if the full value of surveys with tuberculin is to be realized. For example, it has been shown by Long and Seibert²⁹ in their series of tests with purified protein derivative that the present decline in tuberculosis morbidity is associated with a marked decline in the intensity of allergy; and, on the other hand, it has been shown by Opie and others that morbidity, that is, active phthisis, goes parallel with the incidence of hypersensitiveness, which is a point in favor of those who hold for hypersensitiveness as a reactivating agent.

The degree of allergy varies with the level of tubercularization in the environment, that is, differences in exposure by contact; hence it would appear that it is not the absolute but the relative level which counts. In

23. Courcoux, A., and Albert, A.: Quelques cas de primo-infection du jeune adulte, *Rev. de la tuberc.* 2: 71 (Jan.) 1936.

24. Irimescu, S., and Nasta: Proceedings of the Tenth International Tuberculosis Congress: Lisbon, 1937, *Bull. Internat. Union Against Tuberculosis* 14: 495 (Oct.) 1937.

25. Topley, W. W. C., and Wilson, G. S.: Tuberculosis, in the Principles of Bacteriology and Immunity, London, Edward Arnold & Co., 1936.

26. Braeuning, H.; Ulrici, H.; Graeff, S., and Ickert, F., quoted by Redeker: Das Problem der Reinfektion vom klinischen Standpunkt aus; in Engel, Stefan, and Pirquet, Clemens: *Handbuch der Kinder tuberkulose*, Leipzig, Georg Thieme, 1930, vol. 1, p. 261.

27. Boyd, A. R. J.: The Incidence of Tuberculosis in Children Entering Primary Schools in Vancouver, *Am. Rev. Tuberc.* 34: 67 (July) 1936.

28. Schuman, Charles: Contact as a Factor in the Transmission of Tuberculosis, *Am. Rev. Tuberc.* 34: 85 (July) 1936.

29. Long, E. R., and Seibert, Florence B.: Further Studies on Purified Protein Derivative of Tuberculin, *Am. Rev. Tuberc.* 35: 281 (March) 1937.

30. Wilcocks, Charles: The Tuberculosis of the Natives of Tanganyika Territory, *Brit. J. Tuberc.* 31: 223 (July) 1937.

persons living in a tuberculized environment, exposed constantly to infection, a permanent high level of allergy is maintained, and the exposure must be greatly intensified to produce a dangerous degree of hypersensitization. On the other hand, in those living in an environment of low tuberculation, tending to exhibit a low level of allergy, a much less intense exposure may produce hypersensitiveness. It would appear, therefore, that it is not the dose of infection alone but the previous degree of allergy which in any individual case indicates the danger of reactivation of lesions through hypersensitiveness. The practical importance of this situation is apparent; i. e., a given amount of exposure to infection may be serious for one person and quite harmless for another.

It must, however, be borne in mind that change in the level of allergy is not the only factor, as has been well emphasized by Topley, who stated:

How much of this activation of latent lesions was due to the allergic condition of the tissues, and how much to the effect of physical fatigue and possibly other environmental conditions in lowering the general resistance of the body, it is impossible to say.

My discussion has served to indicate how complex and at the same time how fascinating is this whole question of allergy in tuberculosis and how much it requires further study.

The present state of knowledge tends to indicate that:

1. Tuberculin allergy is a relative phenomenon, which must always be considered in relation to the level of tuberculation in the environment or the extent of tuberculosis present in the individuals in question.

2. It is not the momentary level of allergy but its relative changes in either direction which are significant.

3. Infection sensitizes. Superinfection hypersensitizes. Hypersensitization may act to promote progression of recent lesions or reactivation of old lesions if it occurs too suddenly or becomes excessive.

SUMMARY AND PRACTICAL APPLICATIONS

1. Continued or frequent exposure to large doses of infection may lead to acute disseminated tuberculosis in previously uninfected persons, especially in young children; or in those already primarily infected it may give rise to active phthisis by the exacerbation of old latent lesions through hypersensitization or possibly by the formation of new pulmonary lesions through exogenous superinfection. Consequently, protection from such undue exposure is of paramount importance in the prevention of tuberculosis. Institutional segregation of patients with advanced infection is by far the most effective step in this direction.

2. Although in most communities from 30 to 80 per cent of the population eventually is infected with tuberculosis, only from 1 to 2 per cent contract active disease. It is therefore as important to analyze why the majority stay well as to discover why the comparatively few become sick. The study of resistance is of as great, if not greater, importance than the study of infection.

3. There is much that is not known about resistance to tuberculosis, and much of our supposed knowledge is based on inference rather than on definite proof. Natural or constitutional resistance would appear to be a real thing, as evidenced by the great variation in susceptibility under similar conditions of infection in individuals, in families and in races. This applies to susceptibility not only to disease but to infection, as shown by an appreciable percentage of exposed children who do not react to tuberculin. It would appear that

this natural resistance can be enhanced through generations, and the question of the possibility of transmission through inheritance of at least a capacity to develop resistance is a live question. More and more is heard of constitutional factors in resistance not only to tuberculosis but to other diseases as well. The development of further knowledge in this direction will merit attention.

4. There is overwhelming evidence that a tuberculous infection successfully met changes the reaction of the body to subsequent infections, whether from within or without, in such a way as to increase resistance. Such acquired resistance is only relative and may be overcome by large doses of infection or may be lowered by various adverse environmental factors. The attainment of this resistance, acquired through many years or even through generations of exposure to repeated small doses of infection, has greatly modified the character of the disease and diminished its prevalence. What the epidemiologic effect will be of the increasing proportion of uninfected persons and their possible exposure to infection later in life from the residual foci of disease in urban centers is one of the great open questions of the future. Opinion is sharply divided as to whether it is better to face the vicissitudes of life with a positive or a negative reaction to tuberculin. If the former, is it better to receive the infection early in childhood or late in adult life? If the latter, what is the danger of contracting an acutely virulent type of tuberculosis rather than a more benign chronic type? On these points also opinions differ.

5. At first sight the two opposing theories of the exogenous and the endogenous pathogenesis of phthisis may seem a technical problem of main interest only to pathologists. When analyzed, however, their practical importance is obvious. If phthisis arises in the main from the inhalation of large or frequent doses of tubercle bacilli and the old residual lesions of previous small infections are innocuous scars, then efforts can be concentrated solely on the prevention of such exposure. If, on the other hand, infections insufficient to cause actual disease leave behind them in the lungs latent foci capable of reactivation not only by exposure to new infection but by numerous environmental factors which, by lowering resistance, allow the bacilli to multiply and the lesions to become active, then these latent lesions assume great importance as the potential sources of phthisis. Many, perhaps the majority, of students now believe that they constitute not only possible but the main factors in the ultimate development of phthisis. The discovery and the management of these potential lesions then become one of the great clinical and public health problems.

6. The discovery of these lesions is accomplished by roentgenograms. They give no physical signs and no symptoms until they become active. The extraordinary extension of roentgenologic surveys is showing them up by the thousands. In the great majority of cases these lesions are latent and innocuous and will always remain so under ordinary conditions of life. It is therefore unnecessary and unjust to submit them to the long treatment indicated for active tuberculosis. They are, however, possible sources of phthisis; consequently the subjects should be kept under regular supervision, with periodic roentgenograms and warnings as to the danger signals of beginning active disease. They should be surrounded by a protective environment, by which is meant freedom from the factors lowering

resistance, on the one hand, and freedom from exposure to hypersensitizing doses of infection, on the other. When activity is discovered early, they respond remarkably well to modern rest treatment, but to detect an early stage requires careful and expert supervision constantly exercised over periods of years. It would appear that the discovery and proper management of latent lesions constitute the greatest opportunity for clinicians to make a real contribution to the prevention of phthisis that exists today. Beginnings only are being made in this direction.

7. Closely associated with the roentgenologic surveys are the survey with tuberculin. They are affording much epidemiologic as well as clinical information of great value. They have been employed largely to determine the extent of infection which exists in a given community at a given time. It would appear that they may have wider possibilities. The reaction to tuberculin in any given person may change; it may become less or entirely disappear, or it may become more marked. To study a community accurately, periodic repetitions of the test would be helpful. These have not yet been done on a wide scale. The results might be expected to give important information as to the real significance of these changes, their possible relationship to the changing incidence of exposure to infection and their possible relationship to the development of clinical disease. A better understanding of the significance of negative reactions would also be a real contribution to our present knowledge, which is now more suggestive than complete.

8. It is possible that as a result of more careful clinical and epidemiologic studies, knowledge might be obtained which would lead to the discrimination between persons who would be a good risk and those who would be a bad risk when unduly exposed to infection. It is obviously impossible, for example, in the matter of medicine and nursing to exclude all young people entering these professions from exposure to tuberculous infection. As a very small percentage of physicians and nurses actually contract the disease even when seriously exposed to infection, it is obvious that other factors than the infection itself are important. The exposure of young people with a negative tuberculin reaction to intimate contact with infection is obviously undesirable. Also, it has been shown that exposure may result in exacerbation of lesions already existing. It would appear at least a possibility that if one could gradually accustom a person whose reaction to tuberculin was negative to small, properly spaced doses of infection, gradual tolerance to larger doses of infection could be achieved. There is certainly evidence that changes of environment that result in sudden increase of allergy may be a factor in the development of clinical disease. By careful study of persons having apparently inactive lesions, a basis of judgment as to who is likely to react unfavorably and who is not might be formed.

On the other hand, it is distinctly a possibility of the future that some form of vaccination may be perfected which will definitely diminish the danger of disease from contact with infection. Experiments with BCG are most interesting and suggestive, but apparently BCG in itself has as yet not been proved to be the ideal vaccine. It is applicable only to the uninfected, and for them its efficacy is not yet proved. The future may provide a form of vaccine to be used by means of repeated small injections over long periods for both infected and uninfected persons.

9. From all these considerations it is obvious that one should carefully consider what is the ultimate goal aimed at for the control of tuberculosis. If it is to be the total eradication of the disease, with an absolutely uninfected community, how seriously should one take the warning of Bushnell and others that eventually such a community of virgin soil might revert to the early epidemiologic stage, in which acute epidemic forms of tuberculosis may appear, due to exposure to the few remaining uneradicated foci? Should one look rather to a form of vaccination, either by control of small doses of infection, such as apparently has been going on throughout the civilized world, on the other hand, to a more accurate and satisfactory form of artificial vaccination?

10. I have touched on only a few of the problems of tuberculosis which are still unsolved. It would appear obvious that the campaign must be based on accurate scientific knowledge and that this is still lacking in some important particulars. Consequently it would be a mistake to assume that the methods now employed are certainly sufficient to solve the tuberculosis problem. They must change in the light of new knowledge, and it may well be that the future holds unwelcome possibilities not visualized by those who consider that the goal would be in sight if the methods which appear adequate according to our present knowledge were thoroughly applied.

133 East Sixty-Fourth Street.

CONCENTRATIONS OF CHLORIDE, SODIUM AND POTASSIUM IN URINE AND BLOOD

THEIR DIAGNOSTIC SIGNIFICANCE IN
ADRENAL INSUFFICIENCY

HAYDN H. CUTLER, M.D.

Fellow in Medicine, the Mayo Foundation

MARSCHELLE H. POWER, Ph.D.

AND

RUSSELL M. WILDER, M.D.

ROCHESTER, MINN.

It was shown by Loeb and his associates¹ that adrenalectomized dogs excreted excessive amounts of sodium and chloride and suggested² that the so-called crisis of Addison's disease might result from a similar loss of these electrolytes. It later was demonstrated by one of us (Wilder) with Kendall and others³ that administering potassium to patients with Addison's disease would provoke excretion of sodium and chloride

¹ From the Division of Biochemistry (Dr. Power) and the Division of Medicine (Dr. Wilder), the Mayo Clinic.

Read before the Association of American Physicians, Atlantic City, N. J., May 4, 1938. Also presented in part before the Federation of American Societies for Experimental Biology, Baltimore, March 30, 1938.

Technical assistance in this investigation was obtained from Miss Kathryn Smith, assistant floor supervisor, and Miss Jane Pewters, floor dietitian, St. Mary's Hospital. Our analytic assistants were Miss Kathryn Ryan, Miss Lenore Rivers, Mrs. Lucile Adamson and Miss Charlotte Bradshaw. Dr. Everett Geer gave permission to examine six patients with pulmonary tuberculosis at the Ancker Hospital, St. Paul.

¹ Loeb, R. F.; Atchley, D. W.; Benedict, E. M., and Leland, Jessica: Electrolyte Balance Studies in Adrenalectomized Dogs with Particular Reference to the Excretion of Sodium, *J. Exper. Med.* 57: 775-792 (May) 1933.

² Loeb, R. F.; Atchley, D. W.; Gutman, Ethel B., and Jillson, Ruth: On the Mechanism of Sodium Depletion in Addison's Disease, *Proc. Soc. Exper. Biol. & Med.* 31: 130-133 (Oct.) 1933.

³ Wilder, R. M.; Kendall, E. C.; Snell, A. M.; Kepler, E. J.; Rynearson, E. H., and Adams, Mildred: Intake of Potassium, An Important Consideration in Addison's Disease: A Metabolic Study, *Arch. Int. Med.* 59: 367-392 (March) 1937. Wilder, R. M.; Snell, A. M.; Kepler, E. J.; Rynearson, E. H.; Adams, Mildred, and Kendall, E. C.: Control of Addison's Disease with a Diet Restricted in Potassium: A Clinical Study, *Proc. Staff Meet., Mayo Clin.* 11: 273-283 (April) 1936.

and precipitate crisis. From this the supposition arose that examination of the urine for sodium and chloride, under standard conditions of administration of potassium, might provide more reliable information about adrenocortical function than frequently is obtained by examination of the blood.

Preliminary studies revealed that the supposition probably was justified. Under conditions imposed, the excretions of chloride and sodium in urine of eight subjects with classic Addison's disease were much greater than those found in a group of eight subjects without evident disease of the adrenal glands. Then a more rigidly standardized procedure, to be described, was adopted, and with it thirty-six additional subjects were examined (table 1). Eight of these were other

the daily intake of potassium ion to 9 Gm. We have never encountered a case of tuberculosis or atrophy of the adrenal glands in which this extended period of salt restriction and high potassium failed to provide clear evidence of cortical insufficiency.

THE STANDARDIZED PROCEDURE

When patients with Addison's disease previously were receiving either adrenal cortex extract or extra salts of sodium, these were withheld on the day preceding the first day of the special examination. Longer periods of such preparation proved to be unnecessary.

On the first day of the examination, and thereafter until its close, a diet low in salt was served, which by calculation provided 0.95 Gm. of chloride ion, 0.59 Gm.

TABLE 1.—Rates of Excretion of Sodium, Chloride and Potassium, Together with Concentrations

	Sodium							
	Blood Plasma, Mg. per 100 Cc.		Urine, Mg. per 100 Cc.		Urine, Mg. per Kg. per Hr.		Blood Plasma, Mg. per 100 Cc.	
	Mean	Range	Mean	Range	Mean	Range	Mean	Range
Subjects with Addison's disease (7 cases)								
24 hr. period, 2d day salt deprivation.....	299 * (130) ‡	286-309 (124.3-134.3)	108	118-200	2.73 (0.119)	1.26-5.4 (0.059-0.235)	336 * 94.6	298-333 (83.9-92.4)
4 hr. period, morning 3d day salt deprivation	270.6† (121.6)	247-292 (107.4-127)	206.7	165-232	2.53 (0.112)	0.74-7.59 (0.032-0.33)	313.6† (88.2)	271-327 (76.2-91.9)
Subjects without Addison's disease; summary of all subjects (28 cases)								
24 hr. period, 2d day salt deprivation.....	311.6 (135.5)	300-322 (130.4-140)	57	5-150	0.395 (0.039)	0.168-2.06 (0.0073-0.09)	349 (93.3)	333-371 (83.8-101.3)
4 hr. period, morning 3d day salt deprivation	307.6 (133.7)	289-325 (125.7-141.3)	22.4	6-85	0.405 (0.021)	0.059-1.18 (0.0038-0.051)	342 (86.3)	324-367 (81.2-103.4)
Subjects without Addison's disease; asthenia (6 cases)								
24 hr. period, 2d day salt deprivation.....	311.8	303-318	70.3	31-150	1.17	0.57-2.06	348.8	340-355
4 hr. period, morning 3d day salt deprivation	307.7	300-312	28.6	5-85	0.54	0.17-0.83	342.5	329-355
Subjects without Addison's disease; tuberculosis (7 cases)								
24 hr. period, 2d day salt deprivation.....	303.3 (134)	302-316 (132-137)	36.1	10-70	0.41	0.17-0.57	351.7 (93)	341-363 (83.5-104)
4 hr. period, morning 3d day salt deprivation	306.9 (133)	289-321 (123-139)	25.3	10-57	0.73	0.3-1.18	344.7 (87)	324-366 (81.5-102)
Subjects without Addison's disease; miscellaneous diseases (5 cases)								
24 hr. period, 2d day salt deprivation.....	310	300-322	68	23-105	1.21	0.84-2.02	345.4	333-353
4 hr. period, morning 3d day salt deprivation	304.8	297-311	23.8	5-55	0.38	0.19-0.57	338.2	329-345
Subjects without Addison's disease; healthy men and women (10 cases)								
24 hr. period, 2d day salt deprivation.....	316 (137)	310-320 (135-139)	55	33-104	0.81	0.47-1.43	349 (93)	340-371 (85-104.5)
4 hr. period, morning 3d day salt deprivation	310.8 (135.5)	292-325 (131.5-141)	11.7	6-22	0.23	0.033-0.84	342.3 (90.5)	324-367 (81.5-102)

* Represents blood specimen at beginning of twenty-four hour period.

† Represents highest urea observed while under observation.

patients with signs and symptoms typical of Addison's disease; six were patients who complained of nondescript asthenias; seven were patients with frank tuberculosis (pulmonary tuberculosis, six cases, three with fever; urogenital tuberculosis, one case); ten were healthy men or women and five were patients with miscellaneous diseases, including chronic infectious arthritis (two cases), metastatic staphylococcic abscess with fever (one case), duodenal ulcer (one case) and nephrosclerosis with hypertension (one case).⁴ Whenever there was any suspicion of involvement of the adrenal glands (patients with unexplained asthenia and those with tuberculosis) additional evidence of adrenocortical adequacy was sought by extending the period of restricted intake of salt, in the standard examination to be described, to a total of six days, for the last three of these enough potassium citrate being given to bring

of sodium and 4.1 Gm. of potassium (table 2). The fluid intake of the first day was not measured, but the free drinking of water was encouraged. On the afternoon of the first day extra potassium was given, as potassium citrate, in a dose representing 33 mg. of potassium per kilogram of body weight (42 mg. of potassium citrate per pound).

On the second day the intake of liquid was made to equal 40 cc. for each kilogram of body weight, and on the morning of this day the dose of potassium citrate was repeated.

On the third day 20 cc. of liquid per kilogram of body weight was given before 11 a. m. At 12 noon of this third day the examination ended, except in those cases in which the period of deprivation of salt was extended in order to obtain additional evidence of the state of adrenocortical function. At the close of every examination, in all cases in which adrenal insufficiency was suspected, an intravenous injection was given of 1,000 cc. of sterile solution containing 50 Gm. of

4. Two other subjects were examined after the compilation of table 1; one a patient with Addison's disease and one with an asthenia thought to be due to carcinomatosis.

d-glucose, 10 Gm. of sodium chloride, 5 Gm. of sodium citrate and 20 cc. of an active preparation of cortical hormone.⁵

Blood was drawn in an oiled syringe from the cubital vein at 8 a. m. of the second day of examination and at 10 a. m. of the third day. It was transferred to cooled 20 cc. hematocrit tubes containing heparin and oil, and the plasma was separated by means of a refrigerated centrifuge. Urine was collected in three periods: from 8 a. m. to 8 p. m. of the second day, from 8 p. m. to 8 a. m. of the third day, and from 8 a. m. to 12 noon of the third day.⁶

RESULTS

A summary of the data obtained by means of this procedure in thirty-five cases is given in table 1.

in Blood and Urine: Observations on Thirty-Five Subjects, Seven with Addison's Disease

Chloride		Potassium								Urine Volume, Cc. per Min.		Hematoerit, per Cent Cells		Blood Urea, Mg. per 100 Cc.	
Urine, Mg. per 100 Cc.		Urine, Mg. per Kg. per Hr.		Blood Plasma, Mg. per 100 Cc.		Urine, Mg. per Kg. per Hr.									
Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range		
229	139-352	3.4 (0.096)	1.17-7.0 (0.033-0.197)	20 (5.13)	17-26.7 (4.36-6.85)	2.3 (0.059)	1.44-3.0 (0.037-0.077)	1.37	0.75-2.0	44.1	37.9-53.7	45.6	21-95†		
293.4	229-356	3.48 (0.093)	1.09-8.7 (0.031-0.245)	21.5‡ (5.51)	18.8-29.5 (4.82-7.56)	2.72 (0.07)	1.13-8.58 (0.029-0.22)	1.13	0.30-1.51	46.2	40.7-54.7	....	.....
50	32-180	1.42 (0.04)	0.57-2.72 (0.016-0.077)	17.7 (4.51)	15.2-23.2 (3.9-5.95)	2.98 (0.076)	1.68-4.91 (0.043-0.126)	1.87	0.52-3.1	46.6	43-50.3	....	.....
54.2	17-141	1.23 (0.035)	0.61-2.4 (0.017-0.068)	18.4 (4.72)	14.5-26.2 (3.72-6.72)	3.51 (0.09)	1.01-11.1 (0.026-0.279)	3.10	0.52-6.2	47.4	42.8-54.6	....	.....
104.2	01-180	1.64	1.01-2.5	18.6	15.8-19.2	2.74	1.75-3.4	2.1	1.5-2.6	48.0	46.8-49.4	....	.....
63.3	31-133	1.46	1.0-2.3	19.3	15.7-21.9	2.85	1.0-3.8	3.2	0.52-6.1	49.6	47-51	....	.....
68	32-133	0.81	0.51-1.25	18.6	15.2-23.2	2.65	2.07-3.2	1.3	0.52-2.2	46	.....	....	.....
66	20-141	1.44	0.63-2.4	19.8	14.9-26.2	5.37	1.55-11.1	2.8	0.9-4.1	46	.....	....	.....
103	36-138	1.81	0.73-2.72	17.2	15.3-18.5	3.71	1.65-4.91	1.9	1.0-2.7	44.8	43-48.9	....	.....
44.3	17-77	0.8	0.61-1.0	16.3	14.5-20.1	2.71	1.12-4.3	2.1	0.82-3.8	45.5	42.8-54.6	....	.....
83.8	48-125	1.43	0.92-1.92	16.6	15.8-18.1	2.83	2-3.65	2.16	1.6-3.1	48.1	45.9-50.3	....	.....
43.7	23-137	1.23	0.65-1.83	18.1	16-21.6	3.13	1.7-4.7	4.3	0.69-6.2	47.3	45.5-49	....	.....

§ Numbers in parentheses represent milliequivalents.

† Represents blood specimens in middle of four hour period.

Blood Plasma Sodium.—The average value for sodium in the blood of subjects with Addison's disease was distinctly lower than the average for all other subjects. However, the range of values for the former widely overlapped the values found in the other subjects. This was true for the third day of examination as well as for the second day.

5. The constituents of this solution were held ready at all times for immediate use if necessary. One of the patients with Addison's disease developed symptoms of crisis in the afternoon of the second day. In this case, which is omitted from table 1, symptoms typical of the Addisonian crisis were accompanied by an abnormally large excretion of chloride and sodium in the urine. The examination was brought to a close at 8 p. m. on the second day; the solution described was administered and promptly restored the patient to a satisfactory condition.

6. Chloride in plasma was determined by a slight modification of the method of Ancel Keys (The Microdetermination of Chlorides in Biological Materials: Presentation of a Method and an Analysis of Its Use, J. Biol. Chem. 119: 389-403 [July] 1937), that in urine by the Volhard-Harvey titration, with the reagents of J. P. Peters and D. D. Van Slyke (Quantitative Clinical Chemistry: Methods, Baltimore, Williams & Wilkins Company, 1932, vol. 2, pp. 835-836). Sodium in plasma and urine was determined by the method of Butler and Tutthill (quoted by Peters and Van Slyke: Quantitative Clinical Chemistry: Methods, vol. 2, pp. 732-736), and potassium in plasma and urine by the chloroplatinate method of Shohl and Bennett as modified by Eva R. Hartzler (A Note on the Determination of Potassium by the Method of Shohl and Bennett, J. Biol. Chem. 122: 19-20 [Dec.] 1937).

The average depression of these values, from the second to the third day, in subjects with Addison's disease was 19.4 mg. per hundred cubic centimeters; that in subjects without Addison's disease was only 3.6 mg. per hundred cubic centimeters. However, wide overlapping again was evident.

Blood Plasma Chloride.—The statements about the values for sodium in the plasma apply with almost equal force to the values obtained for chloride.

Blood Plasma Potassium.—The average of all values for potassium in the plasma of the subjects with Addison's disease was only slightly higher (about 3 mg. per hundred cubic centimeters) than that of the subjects without Addison's disease. The values for the two groups overlapped widely.

Hematocrit Determinations and Values for Blood Urea.—The hematocrit determinations indicated that the hemoconcentration which occurred during the interval between drawing of the first and second samples of blood was slightly greater in several of the subjects with Addison's disease than in those without Addison's disease. The values for blood urea were elevated in several cases of Addison's disease, so that the mean for this value was abnormal. However, the range of values both for hematocrit determinations and for blood urea extended far into the zone of values found in normal subjects.

Urine Sodium.—The mean value for the excretion of sodium, in terms of milligrams of sodium per kilogram of body weight per hour, in the urine for the twenty-four hours of the second day of examination was more than three times as great for subjects with Addison's disease as for those without; and in the urine of the four hour period of the third day this value was more than five times as great. The individual values for the

A urinary concentration of chloride in excess of 225 mg. per hundred cubic centimeters, to judge from our observations, is indicative of some abnormality of adrenocortical function, whereas a concentration of less than 125 mg. per hundred cubic centimeters probably can be accepted as evidence of normality. Values for concentration between these two figures are inconclusive and, when obtained in any examination, a longer period of restricted intake of salt may be necessary for diagnosis. However, from our experience such intermediate values will be encountered infrequently.

The presence of complicating organic disease may militate against the diagnostic significance of urinary concentration of chloride. This will apply particularly to uncontrolled diabetes and to some forms of nephritis. It did not apply to the active tuberculosis present in seven of the control subjects in this study (three of them with fever) or to the five patients with other disease (one with fever).⁹

It must be emphasized that the conditions described for the preparation of patients and the conduct of their subsequent examination cannot be neglected, although further investigation may reveal that less rigid regulation will suffice. It also must be emphasized that restriction of sodium chloride and administration of potassium, while involving no apparent risk when the adrenal glands are normal, is a dangerous procedure under conditions of severe adrenal insufficiency. The diagnostic procedure we have instituted calls for relatively small doses of potassium and for a period of deprivation of salt of only fifty-two hours. Thus, it inflicts less risk of collapse than the six day period of restriction imposed by the procedure suggested by Harrop¹⁰ in 1933 and modified by us in 1935.⁹ Nevertheless, fifty-two hours of restriction of salt, even with small doses of potassium, carries some risk, and the examination of patients by this means must not be undertaken unless bed rest or at least room rest is enforced, continuous nursing attention is provided, and facilities are at hand for immediate intravenous injection in emergency of sodium chloride, sodium citrate and adrenal cortex extract.

OTHER DIAGNOSTIC PROCEDURES

Zwemer and Truszkowski¹¹ have proposed the giving of from 10 to 20 mg. of potassium per pound of body weight and at short intervals examining the effect of this on the level of potassium in the blood plasma. Gordon, Sevringhaus and Stark,¹² however, applying the procedure in cases of asthenia, in normal subjects and in cases of Addison's disease, found that "it failed to afford any consistent basis for distinguishing between

these three types of subject." Another objection is the necessity for determining potassium in the blood plasma. This is a difficult and exacting analysis in any laboratory, and few clinicians or hospitals are equipped to do analyses for potassium. A great advantage in the diagnostic test we are proposing is that the only chemical analysis demanded is that of the urine for chloride, requiring a minimum of chemical experience and equipment.

The provocative procedure introduced by Harrop and his associates in 1933, and subsequently modified in the Mayo Clinic to control the intake of potassium, while highly reliable has proved hazardous, as recently was illustrated by a fatal accident reported by Lilienfeld.¹³ The test originally was performed by subjecting the patient to a diet very low in sodium chloride, and the diagnosis was considered positive if symptoms of crisis developed, accompanied by subnormal values for sodium in the blood. The modification used in the Mayo Clinic since 1935 is as follows: On the first three days of the test the suspect is given a diet containing 4 Gm. of potassium, and potassium citrate is added to bring the total intake of potassium ion to 6 Gm. daily. On the next three days the total intake of potassium is raised to 9 Gm.

Injection of insulin, as a diagnostic procedure, has not been helpful. The rationale is the known hypersensitiveness to insulin of patients and animals with adrenocortical insufficiency. However, hypersensitiveness to insulin is not confined to conditions of adrenocortical insufficiency. The same statement applies to administration of epinephrine for diagnostic purposes.

The therapeutic test, based on the response of patients to treatment with injection of adrenal cortex extract, is completely unreliable, as has been emphasized by Kline.¹⁴ One of his patients, with an asthenia previously "benefited" by treatment with adrenal cortex extract, had so little trouble with his adrenal glands that he was able to tolerate a nine day period of rigid restriction of sodium chloride. Later he was subjectively as well off as before, with injections of sterile water. A number of patients who under our observation withstood the six day provocative test supplemented by administration of potassium citrate came to us with a diagnosis of Addison's disease made elsewhere and the story of subjective improvement from treatment with "eschatin" or other adrenal cortex extract. Several of them seemed actually to have been benefited by the low intake of salt and large doses of potassium. To give adrenal cortex extract for long periods, unless indisputable evidence has been obtained of the existence of adrenocortical insufficiency, is wasteful of time, money and valuable material. There also is reason to believe that prolonged treatment with it may be injurious. The injection of adrenal cortex extract into normal rats in large doses quickly produces atrophy of the adrenal cortices.¹⁵

CONCLUSIONS

Under standardized conditions as described, the concentration of either chloride or sodium in the urine of patients with Addison's disease has been diagnostically more significant than any other factor examined, giving more valuable information than the volume of the urine,

9. Winkler and Crankshaw (Chloride Depletion in Conditions Other Than Addison's Disease, *J. Clin. Investigation* **17**:17 [Jan.] 1938) have observed large excretions of chloride ion, associated with low values for chloride and sodium in the blood, in three subjects with pulmonary tuberculosis, one subject with carcinoma of the lung and one with arteriosclerotic heart disease. Low values for chloride in the serum were also found in thirteen additional subjects with pulmonary tuberculosis. The authors commented on the importance of this in the differential diagnosis of Addison's disease. The difference in the conditions we imposed makes it impossible to compare the rates of excretion of chloride observed by us with those found by Winkler and Crankshaw. The unreliability of the values for plasma electrolytes as a diagnostic criterion in Addison's disease has been recognized for some time by a number of observers. The finding of high values for nonprotein nitrogen and potassium, and of low values for chloride, sodium and sugar, is suggestive but not diagnostic. The absence of all these abnormalities does not exclude the existence of adrenocortical disease, and low values for chloride and sodium in the plasma, as is shown by our observations and those of Winkler and Crankshaw, occasionally are encountered in other diseases, and even in health.

10. Harrop, G. A.; Weinstein, Albert; Soffer, L. J., and Trescher, J. H.: Diagnosis and Treatment of Addison's Disease, *J. A. M. A.* **100**:1850-1855 (June 10) 1933.

11. Zwemer, R. L., and Truszkowski, Richard: Potassium: A Basal Factor in the Syndrome of Corticoadrenal Insufficiency, *Science* **83**:558-560 (June 5) 1936.

12. Gordon, E. S.; Sevringhaus, E. L., and Stark, Marian E.: The Use of Adrenal Cortex Preparations in the Treatment of Asthenia, *Endocrinology* **22**:45-51 (Jan.) 1938.

13. Lilienfeld, Alfred: The Use of the Low Salt Diet in the Diagnosis of Addison's Disease, *J. A. M. A.* **110**:804-805 (March 12) 1938.

14. Kline, E. M.: The Diagnosis of Addison's Disease, *J. A. M. A.* **108**:1592-1593 (May 8) 1937.

15. Ingalls, D. J.; Higgins, G. N., and Kendall, E. C.: Atrophy of the Adrenal Cortex in the Rat Produced by the Administration of Large Amounts of Cortin, *Anat. Rec.*, to be published.

the concentration of potassium in the urine or the values or change in values during a fifty-two hour period of restricted intake of sodium chloride, of the chloride, sodium or potassium of the blood plasma.

The diagnostic procedure suggested requires fewer days for completion, subjects the patient to less risk of collapse, and in most cases is quite as informative as the six day period of restricted intake of salt heretofore resorted to for diagnostic purposes.

As the concentration of the chloride in the urine gives as important information as that of sodium, the analytic procedure demanded may be limited to analysis for urinary chloride. This represents a distinct advantage, because many clinics and hospitals are not equipped for analytic determinations of sodium or potassium.

Our conclusions are based on examinations of seventeen patients with Addison's disease and thirty-seven controls. The group of controls included ten healthy persons and twenty-seven patients with disease which apparently did not involve the adrenal glands.

FATAL TOXIC REACTIONS ASSOCIATED WITH TRIBROMETHANOL ANESTHESIA

HENRY K. BEECHER, M.D.

BOSTON

Whenever an anesthetic agent has enough good qualities to get it past an early trial period, it seems to take about ten years to evaluate its bad effects. So it is with tribromethanol (avertin) with amylene hydrate. This agent was prepared by Willstätter and Duisberg in 1926.¹ Since that time its sale has been widely promoted by commercial organizations. The term represents a solution of tribromethanol dissolved in amylene hydrate. The latter drug is also an active narcotic. According to Sollmann,² the effects together or separately of these two agents were not studied with the care that should be employed before an agent for general anesthesia is introduced. However, the drug gained a rather widespread popularity, notwithstanding a good many early deaths of patients under it. Enough time has elapsed and enough material is at hand to allow a reasonably accurate estimate to be made of the toxicity of this agent, to allow a consideration of whether its undoubted good qualities outweigh the bad.

The accompanying chart is based on all the cases, 3,934, in which avertin with amylene hydrate was used in the Massachusetts General Hospital³ from the time the first patient was given it, in 1930, until Jan. 1, 1938. The drug quickly increased in use, as the chart shows, and its fall from favor in this hospital was equally rapid. It was never used here in any great proportion of the cases. In 1934, the year in which it was most used, it was administered 734 times. That year a total of 8,069 anesthetics were induced. At the peak of its use, the drug was used in less than 10 per cent of the cases in this hospital.

It may be interesting to consider the factors which have been chiefly responsible for this waxing and

waning of popularity. At this date one's interest lies mainly in a consideration of the circumstances which have contributed to the lessened use of the drug. In order that these limiting influences may be presented in their proper perspective, it will be useful to stop for a moment and consider first the characteristics which led to its popularity.

REASONS FOR THE POPULARITY OF AVERTIN WITH AMYLENE HYDRATE

Probably the outstanding reason for the early success of the drug was that patients like it. Children and nervous adults who have to undergo anesthesia are subjected to a minimum of psychic trauma when this agent is used. Other outstanding reasons for its widespread use are: It is a convenient anesthetic when an operation in or around the airway must be undertaken. It gives quiet breathing and appears to depress the vagal reflexes, which may be very troublesome in intrathoracic operations. Neurosurgeons like it, for if it does not actually lower the intracranial pressure, as has been claimed,⁴ it certainly does not elevate it as much as ether does. According to some authorities, a great advantage is that it allows minimal use of inhalation anesthetics. (This is, to say the least, a questionable advantage when it is gained at the price exacted; see the mortality rate hereafter.) The drug can be used by a novice and allows an inexperienced or inexperienced person to give what appears superficially to be a "good ether." These are the chief reasons for its popularity.

REASONS FOR THE DECLINE IN THE USE OF AVERTIN WITH AMYLENE HYDRATE

1. *Variability of Response.*—The drug had been in use only a little while before it became apparent that patients reacted very differently to a given dose. A good reason for this variability was presented by Sebening.⁵ Twenty patients underwent a rectal injection of a dilute solution of barium sulfate. The volume and the rate of injection were the same as in the case of avertin with amylene hydrate. The following results were observed by roentgen examination: In two cases the entire colon, including the cecum, was filled. The middle of the ascending colon was attained twice and the hepatic flexure four times. The middle of the transverse colon was attained four times and the splenic flexure seven times. In one patient the agent reached only the sigmoid flexure; the following day an injection did not pass the rectosigmoid junction. The causes of such variations are numerous. Important factors are anatomic variations, variations in tone and peristalsis of the bowel and variations in gas and fecal content. The rate of absorption depends largely on the height to which the injected fluid rises. It is an extremely important factor in the toxicity of the drug. A large dose slowly absorbed is not followed by toxic effects; a small dose rapidly absorbed may be. The relatively small difference in size between the usual clinical dose and

With the Approval of the Surgical Executive Committee and from the Surgical Services of the Massachusetts General Hospital.

1. Eicholtz, F.: Ueber rektale Narkose. *Archiv für klinische und ophthalmologische Teil, Deutsche med. Wochenschrift* 52: 1 (Jan.) 1926.

2. Sollmann, Torald: *A Manual of Anesthesia*. W. B. Saunders Company, 1936.

3. This includes the Baker Memorial Division.

4. J. E. Finesinger and Stanley Cobb (The Cerebral Circulation: XXXIV. The Action of Narcotic Drugs on the Pial Vessels, *J. Pharmacol. & Exper. Therap.* 52:1 [Jan.] 1935) have found that in cats under anesthesia induced by avertin with amylene hydrate the pial vessels are narrowed and the cerebrospinal fluid pressure falls. This confirms the results of Severs and his associates,² who found that in dogs under this anesthesia the intracranial pressure is greatly lowered. In man they found that the venous pressure is lowered, and they implied that the drug must have a similar effect on the cerebrospinal fluid pressure. As a result of direct observations, however, W. J. Gardner and C. A. Lamb (Effect of "Avertin" on the Cerebrospinal Fluid Pressure, *J. A. M. A.* 96: 2102 [June 30] 1931) stated that a moderate elevation of cerebrospinal fluid pressure is caused in man by this agent.

5. Sebening, Walter: Recent Researches and Clinical Advances in Avertin Narcosis, *Anesth. & Analg.* 11: 145 (July-Aug.) 1932.

the lethal dose accentuates the importance of this variability in the rate of absorption.

2. *Rectal Irritation.*—With proper testing of the anesthetic solution immediately prior to its injection, rectal irritation should be trivial. I have seen one patient have transient diarrhea even though the solution had been tested with congo red immediately before use and was not decomposed. Occasionally other rectal irritations are reported.

3. *Prolonged Induction Period When an Inhalation Anesthetic Is Used as a Supplement.*—The induction period may be a hazardous time for the patient. The respiratory depression frequently experienced by patients under avertin with amylene hydrate results in a slow intake of the volatile anesthetic, for, as Haggard⁶ has shown so well, the rate of induction of anesthesia (with a given concentration of inhalation anesthetic) depends directly on the volume per minute of air breathed. To be sure, this delay is of no great moment in many cases; but in those patients who have much sputum or an abnormal quantity of mucus, the delay in establishing a proper airway may be serious. Formerly, in this hospital in patients about to undergo lobectomy for bronchiectasis a basal anesthesia was induced by avertin with amylene hydrate. Before inhalation anesthesia adequate to allow the insertion of an intratracheal tube for bronchial aspiration had been obtained, the patient in some cases had passed through a dangerous condition of anoxia because of the partial obstruction of the airway from the purulent bronchial secretions.

4. *Alarming Immediate Depression.*—This is usually transient, lasting from ten to thirty minutes. By the time the patient emerges from the anesthetizing room and comes into the surgeon's presence, he has as a rule partially if not completely recovered. It is impossible to say how much his ultimate recovery has been delayed by the initial period of low blood pressure and anoxia. One can be reasonably certain that this depression, even if transient, has reduced the patient's ability to withstand the tax of a major operation. It seems probable that if more surgeons saw such episodes they would be less keen in their enthusiasm for the agent. Unfortunately the depression is seen chiefly by the anesthetist, who may not report it or who, unhappily, may not even be aware of it if the anesthetization is carried out in a darkened room, as is frequently the case. The outstanding features of the depression are concerned chiefly with the respiration and the circulation.

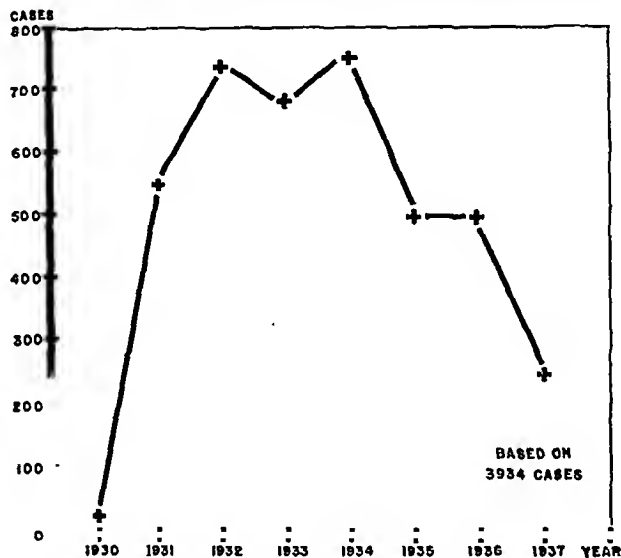
The Respiration: The drug has a profoundly depressant effect on the respiratory center. This depression is greater than that occasioned by chloroform. Not only is the respiration slowed; it becomes shallow as well. The oxygenating power of the body is reduced. Anoxia and cyanosis result.

The Circulation: The force of the heart beat is weakened and the rate slowed. The fall in blood pressure which occurs is due to two main effects: direct cardiac depression and depression of the vasomotor center (Parsons,⁷ Seevers and his co-workers,⁸ Nowak,⁹

Cushny¹⁰ and Sollmann.² In case 6, reported hereafter, death may have been produced by ventricular fibrillation.

5. *Delayed Effects.*—Occasionally the effects described are prolonged or delayed. Not infrequently the patient is irrational or unconscious a long time. There is then danger that he will injure himself or acquire hypostatic pneumonia. There is the need for continuous, constant and intelligent nursing; it is not always available. In addition to the prolonged depression of the central nervous system, the kidneys and liver may suffer severe organic damage (cases 2 and 7).

6. *Numerous Contraindications.*—It has been learned, at the cost of a good many lives, that there are many contraindications to the use of avertin with amylene hydrate, notably hepatic and renal disease (these will be considered in "Comment"), heart disease, myxedema, conditions in which the oxygenating ability of the body is impaired (e. g., when the vital capacity is reduced or anemia is present), widespread sepsis, cachexia, inflam-



The rise and decline in the use of avertin with amylene hydrate at the Massachusetts General Hospital.

mation, infection or ulceration of the intestine from any cause and old age.

7. *Impossibility of Efficiently Removing the Agent Once Toxic Effects Become Evident.*—This drawback is of course common to all the non-volatile anesthetics.

8. *The Fatalities.*—Soon after the drug was introduced there were a good many deaths of patients under it. The doses recommended were too large. After the early fatalities and the shift to the smaller doses now used, a body of arbitrary statements gradually developed. It is commonly said that children are never damaged by a dose of 100 mg. per kilogram of body weight and, further, that the anesthetic can safely be given to adults if the 80 mg. dose is not exceeded, provided the liver and the kidneys are normal. That these are dangerous statements is illustrated by the cases to be reported.

THE DEATHS

Of the eight chief causes for the decline in the popularity of avertin with amylene hydrate, the most important is the last one, the fatalities.

6. Haggard, H. W.: The Absorption, Distribution and Elimination of Ethyl Ether: V. The Importance of the Volume of Breathing, *J. Biol. Chem.* 59:795 (April) 1924.

7. Parsons, F. B.: Some Pharmacological Aspects of Avertin, *Brit. M. J.* 2:709 (Oct) 1929.

8. Seevers, M. H.; Waters, R. M., and Davis, F. A.: The Effect of Tribromethanol on Venous, Intra-Ocular and Intracranial Pressures, *J. Pharmacol. & Exper. Therap.* 42:270 (April) 1931.

9. Nowak, S. J. G.: Influences de l'alcool tribromométhylé et de dérivés nouveaux de l'acide barbiturique (Malonylurée) sur la régulation automatique et réflexe de la pression artérielle et sur la respiration, *Compt. rend. Soc. de Biol.* 116:642 (May) 1934.

10. Cushny, A. R.: A Textbook of Pharmacology and Therapeutics, ed. 8, Philadelphia, Lea & Febiger, 1936.

There are many difficulties in the way of evaluating deaths due to this anesthetic. There are always the complicating factors of the patient's disease and of his operation; and in many cases, though not in all, the drug has been supplemented by nitrous oxide, ether or both. If deaths occur when it has been supplemented by another anesthetic agent, it is necessary to rely on a series large enough to indicate whether or not the death rate is significantly increased when avertin with amylene hydrate is used; that is, whether it is increased above the rate for the supplementing agent.

The cases to be listed were chosen from a considerable number. A case was included only if death could not be attributed to any other cause; even then it was chosen only if toxic reactions occurred which appeared to be directly attributable to the avertin with amylene hydrate. The fact that the choice of this anesthetic was due to bad judgment in a given case was not taken as a valid reason for excluding that case. In the light of present knowledge, the choice appears to have been based on poor judgment in several of the cases.

This anesthetic has been widely used in the Massachusetts General Hospital as the anesthetic for intracranial operations, and a number of the patients have died under circumstances in which it has not been possible to distinguish between the effect of the anesthetic and of the patient's disease. The cases, 268, of tumor of the brain in which this anesthetic was used have accordingly been excluded from consideration.

These limitations in the choice of cases tend to give a conservative picture; even so, the serious toxic reactions were surprisingly frequent and the death rate unreasonably high.

One can have little patience with statements based on memory or on a series of cases published without an intensive search for and record of suspicious cases. Many of the surgeons in this hospital would have said that no deaths due to this agent had occurred here. Others are convinced that not all cases properly belonging in this list have been included. The aim has been to call attention to the variety of toxic reactions to the drug and to indicate as accurately and fairly as possible the order of the death rate due to this agent.

REPORT OF CASES

CASE 1.—History.—A white woman aged 81, a widow, entered this hospital first on May 12, 1931. Her history was typical of chronic cholecystitis. The edge of the liver was palpable 2 fingerbreadths below the costal margin, and the epigastric region was very tender. The only abnormalities were a coarse systolic murmur heard all over the precordium, a blood pressure of 190/120 and a positive reaction to the Graham test. The reasonable observation was made by the intern who examined the patient that she was a poor risk for ether anesthesia and that spinal anesthesia and avertin with amylene hydrate were contraindicated. For this reason and because of her age, the patient was discharged without operation, since she was not uncomfortable at the time.

Two and one-half months later, July 27, the patient was readmitted because of nausea and colicky pains in the right upper quadrant. At this time her blood pressure was 165/78 and her physical condition was otherwise unchanged. Operation was decided on.

July 30 the patient received subcutaneous preanesthetic injection of $\frac{1}{2}$ grain (0.02 Gm.) of pantopon (the hydrochlorides of the alkaloids of opium, principally morphine) and $\frac{1}{150}$ grain (0.0004 Gm.) of atropine. With considerable boldness the surgeon decided to use 100 mg. of avertin with amylene hydrate per kilogram of body weight rectally. He supplemented it

with 50 cc. of 1 per cent procaine hydrochloride injected into the abdominal wall and light ether anesthesia induced by the drop method.

At the start of the anesthesia the blood pressure was 180/85. Ten minutes after the avertin had been administered the blood pressure had fallen to 120/60. The operation was delayed for forty minutes after the rectal injection had been made. Twenty minutes after it was started the blood pressure had fallen to one third of its initial value, that is, to 60/30. The anesthesia appears to have been chiefly responsible for this drop, for, notwithstanding the continuance of the operation, the blood pressure rose steadily from the low point, which occurred twenty minutes after the start of the operation, to 150/80 at the end. Presumably this rise coincided with partial detoxification of the avertin. A cholecystectomy with drainage was carried out.

The patient never regained consciousness. Two hours after the operation was completed the blood pressure began to fall. The record contains the note that the patient "gradually became more cyanotic." When the cyanosis began is not stated. Coarse tracheal rales developed eight and one-half hours after the avertin was given, and the patient died twenty-one and one-half hours after its administration.

Necropsy.—The smaller bronchi were filled with a bloody, frothy fluid. The lungs showed slight congestion and moderate edema in the upper lobes, with more marked congestion in both lower lobes. One or two small areas were present in the right lower lobe which suggested patches of early bronchopneumonia.

The heart was markedly contracted. Considerable arteriosclerosis was present in the cerebral, coronary and general arterial systems.

The arteries of the kidneys showed marked fibrous intimal thickening. An occasional glomerulus was completely hyalinized, with atrophy of some of the associated tubules and dilatation of others.

The cells of the liver showed a diffuse fine vacuolization.

The Brain: There was complete absence of cells in a considerable portion of the alveus of the cornu ammonis. The cytoarchitecture elsewhere was fairly well preserved. In the cerebral cortex, in the various parts examined, no Nissl granules were to be seen in the cell bodies of the processes, but the cells were filled with a fine, dustlike material, which gave them a homogeneous appearance and brought out the process more distinctly than is the case with normal cells when only Nissl granules are stained. The nuclei were pale, fairly round, possibly enlarged and usually central. Many of the nucleoli occupied an eccentric or even a peripheral position in the nuclei. Satellite cells were not increased in number. Some of the Purkinje cells of the cerebellum were small and pale. Their number appeared to be diminished. So far as the appearance of the ganglion cells was concerned, the possibility of an artefact had to be kept in mind, but the changes may have been caused by a toxic substance.

Anatomic Diagnoses: The diagnoses were arteriosclerosis, general, cerebral and coronary; bronchopneumonia, early; chronic vascular nephritis, benign type.

This was a case of early use of the drug, and today the patient would not be given avertin with amylene hydrate, for it was plainly contraindicated by her age, by her hepatic disease and by her hypertension.

The facts incriminating this drug are: The profound fall in blood pressure was obviously due to the anesthetic, since it occurred before the operation began and since, in spite of the operation, the blood pressure rose steadily and rapidly throughout the last hour to a reasonable level for the patient, 150/80; the patient failed to recover consciousness, even though the circulation remained in good condition for many hours after the anesthetic was given; at necropsy toxic damage to the brain was suggested. The impaired kidneys, it is now known, greatly increased the hazard. The

absence of any other adequate explanation derived from the necropsy points to the drug as the probable chief cause of death.

CASE 2.—History.—A white married woman, aged 36, a housewife, entered the hospital July 24, 1931, complaining of pain and "numbness" in the perineum and of urinary incontinence of three months' duration. She had no control of the anal sphincter. A bowel movement never occurred without an enema. Physical examination showed a well developed and obese young woman. The lungs and the cardiovascular system were normal. At entry the blood pressure was 146/100; three days later it was 130/60. The patient had a roughly saddle-like distribution of anesthesia. At entry a voided specimen of urine contained thick mucus, numerous red cells and a large trace of albumin, perhaps from the blood.

July 27, after preliminary subcutaneous medication with $\frac{1}{4}$ grain (0.01 Gm.) of morphine and $\frac{1}{50}$ grain (0.0004 Gm.) of atropine, the patient was given rectally a 90 mg. per kilogram of body weight dose of avertin with amylene hydrate. It was supplemented with ether. In the following hour the systolic blood pressure gradually fell from 130 to 88. The patient underwent laminectomy from the fourth lumbar to the first sacral vertebra, inclusive, and excision of a chondroma, which had compressed the roots of the cauda equina. Her condition at the end of the operation was considered to be "fairly good." In the two and one-half hours following the operation the patient's blood pressure declined further, to 75/45, and then gradually rose. During this period the pulse rate fluctuated between 100 and 130. She recovered from the operation, and a month after the operation, August 27, was discharged as "relieved."

About seven weeks later, October 15, the patient reentered the hospital, complaining of a severe pain in the back for the preceding month. She said that the numbness previously described had gradually cleared to a considerable extent. She still had no control of the bladder or of the anal sphincter. She suffered from marked constipation. The physical examination gave about the same results as at her previous entry. A hypesthetic area, sharply confined to the lower lumbar segments, was found. A specimen of urine obtained by catheter showed the "slightest possible trace" of albumin, rare red cells and numerous white cells. In seven determinations the specific gravity varied from 1.010 to 1.030.

A new block of the spinal canal was suspected, and a cisternal puncture with injection of iodized poppyseed oil was carried out November 9. She was having so much pain that use of a general anesthetic was necessary. As preanesthetic medication, $\frac{1}{4}$ grain of morphine and $\frac{1}{50}$ grain of atropine were used. An 80 mg. per kilogram of body weight dose of avertin with amylene hydrate was administered rectally. It was supplemented with the open administration of ether. But few significant data were recorded on the anesthesia chart. According to these the patient did not experience any untoward reaction. This procedure gave evidence of a block in the region of the third dorsal vertebra. Roentgenograms were taken with the patient under ether anesthesia November 13.

December 4 the patient underwent a third anesthesia, induced by an 80 mg. per kilogram of body weight dose of avertin with amylene hydrate. This was preceded by subcutaneous injection of $\frac{1}{4}$ grain of morphine at 9 a. m. and again at 10:15 a. m. With the second injection of morphine, $\frac{1}{50}$ grain of atropine was given. The avertin was administered rectally at 10:30 a. m. It was supplemented by nitrous oxide with oxygen and ether.

At the time the avertin was given, the blood pressure was 130/88 and the pulse rate 105. There was a steady, rapid fall in blood pressure, and forty minutes later, that is, five minutes after the operation was started, the blood pressure could not be taken and the pulse rate had risen to 158. For thirty minutes the blood pressure could not be determined. After injection of ephedrine one reading of 120/90 was made. In ten minutes the pressure had fallen to 95/80, where it remained until the operation was finished. The operation required one hour and twenty-five minutes. Laminectomy was carried out. A block of the spinal canal could not be found. The region of the

spinothalamic tracts was incised. The patient was conscious when returned to her bed. She received a blood transfusion of 500 cc.

The patient appeared to make a satisfactory immediate convalescence from the anesthesia, except that there was practically no formation of urine. Four days after the operation determinations of the nonprotein nitrogen revealed a marked elevation, the content being from 66 to 83 mg. per hundred cubic centimeters. In the two days following, the content rose to 120 mg. The content of blood chlorides was reported as 561 mg. December 8 the icteric index was 20 and the red cell count 2,830,000; the hemoglobin content was from 55 to 60 per cent. The white cell count was 19,500 with 97 per cent polymorphonuclears. December 9 the serum protein content was reported as 4.5 mg. per hundred cubic centimeters.

Notwithstanding the use of diuretics, the patient formed scarcely any urine after her last operation. Uremic convulsions developed and she died eight and one-half days after the third administration of avertin with amylene hydrate in four and one-half months.

Necropsy.—Examination of the head was not made. Ecchymotic spots were scattered all over the skin. The wound was clean.

Lungs: The trachea and bronchi contained a moderate amount of frothy fluid. The lungs were markedly edematous. A large amount of frothy fluid could be expressed from the cut surface of the upper lobes: The cut surfaces of the lower lobes appeared congested, purplish red and of a doughy consistency.

Kidneys: They were enlarged and weighed 575 Gm. The capsular space of the glomeruli was wider than usual and filled with debris from inspissated urine. The capsule was not thickened. Many of the cells remaining in the tufts were necrotic. There were large collections of lymphocytes mixed with a few polymorphonuclears throughout the stroma. A few of the glomeruli were completely hyalinized. A limited and relatively symmetric portion of all the tubules, apparently in the Henle loops, showed swelling, pyknosis of the nuclei and desquamation.

Anatomic Diagnoses: The diagnoses were chondroma of the spinal cord, recurrent; acute nephrosis; bronchopneumonia, slight; edema of the lungs; cholelithiasis; hydronephrosis, slight.

After the patient's death it was learned that she had had convulsions at the time of pregnancy. During her stay in the hospital she had some infection of the urinary tract. With such a history, this patient would not be given avertin with amylene hydrate today.

It is impossible to say how much damage to the kidneys the patient had before the first anesthesia, as the preoperative sample of urine, containing red blood cells, was a voided specimen. From a consideration of the size of the kidneys and the microscopic picture it appears to have been slight. The renal shutdown, the acute nephrosis and the pulmonary edema appear to have been consequences of the anesthesia.

CASE 3.—A white married housewife, aged 56, entered the hospital Jan. 12, 1932, complaining of intermittent asthma of one year's duration, which had followed a "cold." She had had daily attacks for the preceding five months and required epinephrine four or five times daily. Physical examination showed that the heart was slightly enlarged to the left. An apical systolic murmur was present; the sounds were of fair quality; the blood pressure was 140/90. The peripheral vessels were definitely sclerosed. Examination of the lungs showed musical rales and prolonged expiration as the only abnormalities. Two specimens of urine contained the "slightest possible trace" of albumin; the sediment was not remarkable. A blood count showed 15 per cent eosinophils, 12,800 white cells, 5,280,000 red cells and 75 per cent hemoglobin. The nonprotein nitrogen content was 29 mg. per hundred cubic centimeters. The Hinton test was negative. The temperature was normal, and the pulse rate varied from 90 to 110. Roentgen examination revealed the presence of gallstones. January 22 the patient's heart and

lungs were reexamined and found to be "in good shape." That day she underwent operation, for, after considerable study, it appeared probable that an infected gallbladder was responsible for her asthma.

Preadesthetic medication of $\frac{1}{6}$ grain of morphine and $\frac{1}{150}$ grain of atropine was given subcutaneously. A 90 mg. per kilogram of body weight dose of avertin with amylene hydrate was administered rectally at 10:30 a. m., and ten minutes later the operation was started. The avertin was supplemented with "a little" nitrous oxide with oxygen. The operation, which consisted of a cholecystectomy with the removal of two gallstones, required only thirty-five minutes. The surgeon's record contains the note that "everything went well." The patient's respiration, pulse, blood pressure and color were normal throughout the operation. A half hour after the operation the blood pressure had fallen to 90/55, where it remained for some hours. By the following morning it had risen to 110/70.

About eight hours after the anesthetic was administered the patient was still considered to be in good condition, though she had not recovered consciousness.

The day after operation the unconscious patient was having "considerable typical asthma." The temperature had risen abruptly to 102 F. (rectally). Apparently she was considered to be in a satisfactory state except for the failure to recover consciousness. Twenty-four hours after the operation she began to be very cyanotic. This cyanosis was most marked in the extremities, especially the hands. It was relieved at once by use of an oxygen tent but returned promptly whenever the patient was placed in room air.

The next day, that is, two days after the operation, the respiratory rate rose sharply from normal to 35, and it climbed steadily to 48 in the succeeding twelve hours. During this time the pulse rate had risen to 160 and the temperature to 103.3 F. (rectally). On this day, forty-eight hours after operation, though no dulness could be detected, the chest was full of "bubbling, watery rales" (? pulmonary edema). The patient died sixty-four hours after administration of the anesthetic without regaining consciousness.

Postmortem examination was not allowed. The patient failed to recover consciousness, and it must be concluded that for some reason she was unable to detoxify the avertin with amylene hydrate though she appeared to be in good condition except for the unconsciousness for twenty-four hours. Pulmonary edema developed. Cyanosis, with peripheral stasis of blood, is a common finding when the circulation is impaired by toxic agents.

CASE 4.—History.—A white Canadian widow, aged 65, entered the hospital Jan. 15, 1932, complaining that she had had weakness and tarry stools for two weeks. Physical examination showed a pale, fairly well developed and moderately well nourished woman with normal lungs and a normal cardiovascular system. The blood pressure was 126/70. Abdominal examination revealed a hard, slightly tender mass in the epigastrium. The number of red cells varied from 1,650,000 to 2,100,000 and the hemoglobin content from 40 to 45 per cent. On smear the red cells appeared typical of secondary anemia. The urine showed from the "slightest possible trace" to a "very slight trace" of albumin; the sediment was not remarkable. The stools were bloody. The patient was given two transfusions before operation and two afterward.

January 22, after preanesthetic medication with $\frac{1}{6}$ grain of morphine and $\frac{1}{150}$ grain of atropine, 80 mg. per kilogram of body weight of avertin with amylene hydrate was given rectally. This was supplemented by nitrous oxide-oxygen and ether anesthesia. A partial gastric resection was carried out, and a leiomyosarcoma excised. A Billroth II anastomosis was made. In the ten minutes following rectal administration of the drug the blood pressure fell from 120/75 to 95/60, and it gradually subsided, so that after one hour it was 83/53. It then rose, so that by the end of a second hour, at which time the operation was completed, it was 95/60. The pulse rate twenty minutes after the avertin was administered had risen

from 90 to 120. The respirations were shallow and slow, the rate being about 15 during much of the first hour; the rate rose to from 20 to 25 during the last hour of operation. The patient was considered to be in fairly good condition by the time the operation was completed.

The record for January 24 contains the rather ambiguous statement "Patient's immediate recovery from the operation two days ago was excellent, *but she has not been conscious.*" (The italics are mine.) Coarse tracheal rales were heard, and she was placed in an oxygen tent. Cyanosis was not observed. While it can appear when the blood contains only 30 per cent hemoglobin, it might easily have been overlooked with the degree of anemia present in this patient. The rectal temperature in the postoperative days fluctuated from 101 to 104 F., and the pulse rate remained around 120. The afternoon of the second day following operation the blood pressure began to fall, and the patient died sixty-one hours after the anesthetic was administered, without regaining consciousness.

Necropsy.—There was no evidence of peritonitis. The right pleural cavity contained 200 cc. of clear, colorless fluid. The right lung was "markedly edematous" and slightly congested. The left lung was "markedly edematous" and congested.

Kidneys: There were hyalinization of some of the glomeruli and considerable intimal thickening of the larger vessels.

Liver: Numerous macroscopic yellowish brown areas were scattered throughout the parenchyma. Microscopic examination showed slight central congestion.

Brain: No lesion of the brain was observed which might explain the clinical picture.

Anatomic Diagnoses: The diagnoses were sarcoma of the stomach; slight bronchopneumonia in the lower lobe of the right lung; edema and congestion of the lungs; hydrothorax, slight, on the right side; cholelithiasis, ampulla of Vater; arteriosclerosis; chronic vascular nephritis.

There were edema and congestion of the lungs and chronic vascular nephritis. One can only speculate as to whether the nephritis significantly retarded the elimination of the avertin with amylene hydrate. Probably it did. There is a question also whether the marked anemia, in conjunction with the depressant effects of the avertin and the nitrous oxide used, did not produce cerebral damage due to anoxemia. Whatever the mechanism, it appears likely that the avertin was an important factor in this patient's death.

Several factors would now contraindicate the use of avertin with amylene hydrate in this case: the patient's age, her anemia and the possible damage to the kidneys (albuminuria).

CASE 5.—A white woman aged 64 entered the hospital April 10, 1933, complaining of intermittent pain in the right side of the face, which had lasted for nine years. The pain was brought on by eating, by cold air and by touching or washing the face. All three divisions of the fifth nerve were involved. Physical examination showed a well developed woman with normal heart and lungs. The blood pressure was 130/80. No abnormalities were discerned except that she was poorly nourished. The urine was normal except for occasional red blood cells in a voided specimen; the Wassermann reaction of the spinal fluid was negative; a roentgenogram of the skull showed nothing abnormal. The patient was sent home, where she was to remain until the malnourishment could be overcome. She returned in one month, May 11. At this time she was still rather poorly nourished. The urine showed a specific gravity of from 1.012 to 1.016. Two voided specimens contained "the slightest possible trace" of albumin. A few hyaline casts and red blood cells were found. One specimen contained granular casts. The red cell count was 4,200,000 and the hemoglobin content was 70 per cent.

On the morning of May 12 the patient was given a 70 mg. per kilogram of body weight dose of avertin with amylene hydrate. This was not supplemented either by preoperative medication or by other anesthetic agents. It was administered rectally. At the beginning of the anesthesia the patient's blood

pressure was 130/70; the pulse rate was 82. After the rectal injection the operation was delayed thirty-eight minutes. During this period the blood pressure fell steadily from its initial value of 130/70 to 70/40. The operation was started and at this time the blood pressure rose rapidly to 140/90, where it remained during most of the operation. The operation consisted of section of the posterior root of the right fifth nerve. This required fifty-nine minutes. By the time it was completed the blood pressure had fallen to 110/75 and the pulse rate had risen to 120.

The operation was described by the surgeon as "an easy one." There was practically no bleeding. To quote from the record: "Patient seemed in very good condition after the operation. She apparently recovered from the anesthetic (according to the nurse's notes the patient was conscious three hours after the operation was completed), though she was drowsy and confused. Then she became more comatose; the blood pressure fell steadily. Her condition became steadily worse until she died." Unfortunately many of the details of the postoperative period were not recorded. The temperature rose gradually for two days, to 104 F. (rectally), and the pulse rate rose to 125 before the respiratory rate had exceeded 24. In the twelve hours immediately preceding death the respiratory rate rather rapidly rose from 24 to 40. Death occurred sixty-four hours after the anesthetic was administered.

Clinically the death could not be explained. Those attending the patient considered it to be due to the anesthetic. Autopsy was not allowed.

The delayed rise in the respiratory rate, as well as the failure to detect pneumonia clinically, does not suggest that pneumonia was the explanation of this death. Clinically, sepsis was not found to be responsible. The patient's failure to recover from her drowsy and confused state immediately after the operation was not explained unless the anesthetic was responsible.

The patient's age and the probable impairment of her kidneys would today make the use of avertin with amylene hydrate undesirable.

CASE 6.—A Polish girl aged 12 entered the hospital June 15, 1935, with a diagnosis of arthritis deformans (Still's disease) of five years' duration. She complained of inability to walk because of the changes in her ankles and had been confined to bed for a year and a half. Physical examination showed a well nourished girl with marked deformities of the hands and feet. The cardiovascular system was normal; the blood pressure, 120/80. The urine was normal except for one specimen, which showed "a slight trace" of albumin; however, this was a voided specimen. The red cell count was 4,980,000; the hemoglobin content, 70 per cent. The differential count was normal. The white cell count was 11,300 on admission and a week later was 15,900. The stools were normal. The nonprotein nitrogen content was 20 mg. per hundred cubic centimeters. The Hinton test was negative. The temperature was normal.

July 12 the patient was given a subcutaneous injection of $\frac{1}{12}$ grain (0.005 Gm.) of morphine and an 80 mg. per kilogram of body weight dose of avertin with amylene hydrate, administered rectally. Nitrous oxide with oxygen was used to supplement this drug. While the patient was under anesthesia both hands and wrists were manipulated. No significant changes occurred in pulse rate, respiratory rate, blood pressure or color. The surgeon's note states that "the patient stood the procedure well and left the operating room in good condition." She regained consciousness two and one-half hours after the avertin was administered. For three days after this manipulation her temperature rose to 100 F.; it was then normal for three and one-half days.

July 19 the patient was given a subcutaneous injection of $\frac{1}{16}$ grain (0.004 Gm.) of morphine. This was followed in thirty-five minutes by a rectal injection of 80 mg. per kilogram of body weight of avertin with amylene hydrate. Before anesthesia the blood pressure was recorded as 90/58 and the pulse rate as 108. Ten minutes later these readings were essentially unchanged. Fifteen minutes after the avertin was administered it was supplemented with nitrous oxide and oxygen.

Both ankles were manipulated. Suddenly, twenty minutes after the rectal injection had been given, the respirations became shallow and the patient cyanotic. The anesthetist was unable to determine the blood pressure, and the pulse could not be palpated or the heart sounds heard. Artificial respiration was started, oxygen under positive pressure being used. The patient took three or four convulsive inspirations and then stopped. There was no response to stimulants and the patient died. Autopsy was not allowed.

Though it cannot be proved, this case suggests that ventricular fibrillation was the cause of death (see "Comment").

CASE 7.—*History.*—A white single girl aged 19 entered the hospital July 6, 1937, complaining of recurrent subternal pain of over two years' duration. This nonradiating pain appeared most often during meals and occasionally woke the patient up at night. She vomited with the pain on two occasions but not in the year before entry. Examination showed a well developed, well nourished, healthy looking young girl who appeared normal. The blood pressure was 104/60. The urine and the blood count were normal. A Hinton test was negative. The temperature was normal and the pulse rate 80.

July 19, after preanesthetic medication with $\frac{1}{400}$ grain (0.0006 Gm.) of atropine administered subcutaneously, the patient was given 80 mg. per kilogram of body weight of avertin with amylene hydrate rectally. At this time her blood pressure was 120/70, her pulse rate 100 and her respiratory rate 20. In eight minutes she was asleep. Ten minutes after the anesthetic had been given the blood pressure could not be taken. The respirations were slow and shallow. A few minutes later the pulse rate was 140. The respirations became regular and normal twenty minutes after the drug was administered. The blood pressure was 120/60 and the pulse rate 168 twenty minutes later. The pulse rate rapidly declined to 130. The avertin was supplemented with nitrous oxide and oxygen for a few minutes, and then ether and oxygen were administered. Because of the marked depression at the onset, the operation was delayed and did not get under way until one hour after the avertin had been given. The operation required two hours and twenty minutes. It consisted of uneventful removal of a neurofibroma of the mediastinum. No shock was present. The blood pressure persisted at about 135/85; the pulse was rather rapid, the rate fluctuating around 140 (from 130 to 155). The respiratory rate during operation was 40. Throughout the operation there was no sustained tendency of the pulse rate to rise or of the blood pressure to fall. Very little bleeding was encountered. When the patient was returned to her bed at noon she appeared to be in good condition.

An hour after the completion of the operation the blood pressure was still normal, 120/60, and the pulse rate was 132. During the ensuing afternoon and evening there was some fluctuation of the blood pressure, but for more than fifteen hours after the operation the systolic pressure never fell below 95. (At entry the systolic pressure was 104.)

About seven hours after the avertin was administered, the special nurse in charge of the case thought the patient was about to regain consciousness, for she stirred and seemed to be not deeply asleep. Eight hours after the drug was given she became restless, and the nurse gave her $\frac{1}{2}$ grain (0.02 Gm.) of pantopon subcutaneously. This quieted her but did not have any other appreciable effect. At 10:30 p. m., some thirteen hours after the avertin was administered, she again became restless, and the nurse repeated the administration of pantopon. This time the patient's respirations became depressed and considerable cyanosis appeared. She appeared to recover gradually from this condition. She again became restless about five hours later, at 4 a. m., and the pantopon was given a third time. The patient's respirations then became very depressed and gasping. Marked cyanosis appeared, the pulse became weak and the blood pressure fell to 55/35. In about half an hour the pulse improved in character but became irregular; the cyanosis lessened. There was no evidence of cardiac tamponade. The blood pressure remained low. At 7 a. m. the day following operation the rectal temperature was 102 F. By 11 a. m. it had risen abruptly to 106.7 F.

Coramine injected intravenously improved the patient's respirations temporarily. Three transfusions of 500 cc. of blood were given without avail over a twenty-four hour period after the operation.

From eighteen hours after administration of the anesthetic until the patient's death thirty-four and one-half hours after the drug was given, she presented the appearance of a person responding to an overwhelming toxic agent. The blood pressure was low, the skin hot and dry and peripheral stasis of the blood marked. The skin was very cyanotic. Pressure areas remained blanched for some seconds. The clinical diagnosis at that time was streptococcal infection of the mediastinum. Material from the region was cultured after the patient's death but no infection found.

Necropsy.—The head and extremities were not examined. The right lung showed "very diminished aeration" and was "markedly congested" throughout. The left lung showed a moderate number of purplish, atelectatic lobular areas and was engorged. No evidence of consolidation was found. Microscopically, all the blood vessels and the alveolar capillaries were seen to be markedly congested. Most of the alveoli in the section were slightly atelectatic. The alveolar spaces contained an eosinophilic serous deposit, some monocytes (a few of which contain phagocytized brown pigment), a moderate number of red cells and some polymorphonuclear neutrophils. In one area the neutrophils were densely collected but without appreciable fibrin. Some of the bronchioles contained clumps of neutrophils.

Liver: Grossly, a few areas of yellowish mottling were seen on section throughout the parenchyma. Microscopically, the central and to some extent the midzonal portions of the lobules stood out sharply from the rest of the parenchyma. The hepatic cells were more eosinophilic, were vacuolated and for the most part were separated from one another so that they appeared to be floating as individual round cells. In a few places fibrin and a few neutrophils could be seen. The sinusoidal endothelium was well separated from the hepatic cells, and in some of the central areas there had been diapedesis of the red cells through it.

Kidneys: The convoluted tubules showed some cloudy swelling.

Rectum: In the ampulla a number of tiny, reddened, slightly vascular areas about 1 mm. in diameter were seen in the mucosa; these gave a somewhat peppered appearance. Microscopically, the most superficial layer of the epithelium was seen to have desquamated. One small area exhibited hemorrhage.

Anatomic Diagnoses: The diagnoses were pulmonary congestion and atelectasis, bilateral; congestion of the spleen; central necrosis of the liver, early.

For eighteen hours after the administration of the avertin with amylene hydrate the patient appeared to be in a satisfactory condition except for her failure to regain consciousness. The drug appears to have been responsible.

COMMENT

There is always, perhaps, a temptation to draw too many and too broad conclusions from material of this kind. It will be useful, however, to consider the common features of these cases.

Six of the seven patients who died¹¹ showed an immediate depression after avertin with amylene hydrate was given. In the seventh the depression did not appear until the end of a short operation. Cyanosis was frequently recorded. Only one patient of seven recovered full consciousness; one other was at best drowsy and confused; five did not recover consciousness. Pulmonary edema was a terminal feature in half the cases.

In three cases (2, 6 and 7) the condition appears strikingly reminiscent of damage due to chloroform, and, one is compelled to add, it is reminiscent also of fatal anoxia.

The suspicion that tribromethanol and chloroform produce similar toxic effects is not new. Tribromethanol, the chief anesthetic agent in avertin with amylene hydrate, bears the same relationship to ethyl alcohol as chloroform bears to methane. In the case of both methane and ethyl alcohol the anesthetic action has been greatly intensified by the substitution of three halogen atoms for three hydrogen atoms. It is possible that many of the toxic effects of chloroform can be attributed to hydrochloric acid, which may be formed when chloroform is destroyed. It is not unreasonable to suppose that when tribromethanol is broken down hydrobromic acid may be formed and produce effects somewhat similar to those produced by hydrochloric acid. Traces of bromine have been found in the breath and the sweat after the administration of avertin (Parsons¹²). The drug is generally believed to be detoxified in the liver by conjugation with glycuronic acid and then excreted as a complex organic compound of bromine.

It has been assumed that the chloroform-like toxic effects are produced only by large doses. That this is not the case is shown by the data presented here. While much dwelling on the chloroform analogy is not justified by the evidence at hand, there are clinical as well as theoretic data to suggest that the observed similarities in effect are more than chance.

Chloroform notoriously produces death by acute damage in three regions of the body: ventricular fibrillation in the heart, tubular damage in the kidneys, and central necrosis in the liver.

Death from ventricular fibrillation has never been proved in a human subject who died under chloroform anesthesia; yet ever since Goodman Levy¹³ showed, in his classic studies of death from ventricular fibrillation in animals under chloroform anesthesia, that the clinical observations in man and in animals are so similar, it has been assumed that the patient who dies under light chloroform anesthesia dies of ventricular fibrillation. In case 6 the circumstances preceding and during death, especially the sudden cardiac standstill apparently before the respiration failed, strongly suggest that ventricular fibrillation was the cause of death.

In case 2 the anesthetic produced tubular damage to the kidneys like that caused by chloroform. In case 7, in which there was early central necrosis in the liver, the damage in this region was like that due to chloroform.

Attention should be drawn to the fact that the great majority of the cases reported here describe the use of avertin with amylene hydrate in adults. Children appear to tolerate the drug better than adults. However, the death in the 12 year old patient reported here is a reminder that children are not immune to the toxic effects of the drug.

It is useless to consider mortality figures for a given anesthetic in any but the most general terms. The data usually presented describe not the total death rate, which may not permit accurate evaluation, but rather how often the circulation fails and sudden death occurs. (For example, the role of the anesthetic in causing

11. Curiously, all the patients who died were women, yet there were a few more men than women in the series. An analysis of 500 of the cases spread out over the entire list suggests that the types of operation were comparable for the two sexes. Statistically this appears significant; however, it seems probable that some other explanation is the correct one. It will be interesting to check the point in other series.

12. Parsons, F. B.: Avertin, *Canad. M. A. J.* 24: 59 (Jan.) 1931.

13. Levy, A. G.: Sudden Death Under Light Chloroform Anesthesia, *Proc. Physiol. Soc., J. Physiol.* 42: iii (Jan.) 1911; *Chloroform Anesthesia*, London, John Bale, Sons and Danielsson, Ltd., 1922.

death from postoperative pulmonary complications has never been satisfactorily demonstrated.) So it is with the data presented in this paper. The deaths attributed to avertin with amylene hydrate and included here have been chosen conservatively.

Means chosen from numerous statistical studies suggest that comparative data on mortality would appear approximately as shown in the accompanying table.

It is probable that any agent which produces fatalities with the frequency of avertin with amylene hydrate must injure a great many patients whose injuries go undetected or are attributed to the patient's disease.

The ratio of one death in 500 cases cannot be considered in any precise mathematical sense. A series many times larger than the 3,666 cases considered here would be necessary to give the ratio anything like a literal value.

If four of the cases included here were eliminated from consideration because today the contraindications would be recognized and the drug not administered, the death rate would be in the ratio of one death to 1,200 cases.

Comparative Death Rates

Nitrous oxide.....	1: 50,000 (including short cases)
Ether	1: 5,000
Cyclopropane	1: 3,500
Chloroform	1: 2,000
Spinal anesthesia.....	1: 1,500
Avertin with amylene hydrate	1: 500 (7 deaths in 3,666 * cases)
	or
	1: 1,200†

* Excluding cases of tumor of the brain.

† Excluding four cases in which this anesthetic would be plainly contraindicated today.

The point remains: avertin with amylene hydrate makes a poor showing even when compared with a toxic agent like chloroform. It appears to be more dangerous than the discredited chloroform.

SUMMARY

In eight years avertin with amylene hydrate was used at the Massachusetts General Hospital in 3,934 cases. Though the use of the drug has waxed and waned in this period, it was never used in more than 10 per cent of the cases in which anesthesia was employed. Eight factors have been chiefly responsible for the lessened use of the drug. Seven deaths were associated with its use. According to the mortality rate, considered in its relation to the death rate for other common anesthetic agents, avertin with amylene hydrate appears to be more toxic than chloroform.

The Thalamus and Emotion.—The supposed evidence that the thalamus adds the affective or emotional character to sensations breaks down completely when subjected to critical analysis. The affective changes resulting from thalamic lesions are restricted to a small group of somesthetic sensations and cannot be interpreted as a general change in affectivity. The changes correlate definitely with the special properties of conduction, summation, and irradiation of this group of sensory processes and not at all with a specific locus in the thalamus. The pathological changes following thalamic lesions are primarily in the character of sensations, in intensity, duration, localization, and are therefore not relevant to the problem of affect. There is no evidence whatever that the thalamus contributes facilitative impulses which might form a basis for the motivational aspects of emotion.—Lashley, K. S.: *The Thalamus and Emotion, Psychol. Rev.* 45:42 (Jan.) 1938.

CONCENTRATED HUMAN BLOOD SERUM AS A DIURETIC IN THE TREAT- MENT OF NEPHROSIS

PRELIMINARY REPORT

C. A. ALDRICH, M.D.

WINNETKA, ILL.

JOSEPH STOKES JR., M.D.

PHILADELPHIA

W. PRICE KILLINGSWORTH, M.D.

CHICAGO

AND

AIMS C. MCGUINNESS, M.D.

PHILADELPHIA

The treatment of nephrosis has been especially interesting to clinicians because in this disease edema is usually found without complicating cardiac or arterial lesions. Comparatively recently it has been realized that in nephrosis the kidney need not be severely or irreparably damaged and that, even in the stage of greatest disturbance in water excretion, tests for renal function may give approximately normal results. Such observations have stimulated search for therapeutic agents acting elsewhere than on the kidneys in patients with this condition.

Thus, on the hypothesis that nephrosis might be due to a metabolic disturbance involving the thyroid gland, thyroxine and thyroid extract have been used, with results which at times have appeared promising. Likewise, because it was conceived that a sort of "diabetes albuminuricus" might explain the phenomena of nephrosis, high protein diets were tried, with enough success to warrant their use in most clinics. The theory has been stressed that the water balance between the blood vessels and the tissues is disturbed because of the prolonged loss of plasma protein through the kidneys. However, not one of the many explanations offered has been entirely satisfactory in accounting for all the clinical manifestations or in establishing the exact pathogenesis of nephrosis.

A phenomenon of great interest to clinicians at the present time is the loss of serum albumin in nephrosis. While all the plasma protein fractions are reduced, the most marked loss occurs in the albumin fraction, and this results in a reversal of the albumin-globulin ratio. Since the albumin molecule is much smaller than that of the globulin and therefore more important in the maintenance of colloid osmotic pressure, this marked reduction in the albumin fraction reduces the pressure of the blood plasma to a considerable extent, thus theoretically accounting for an escape of water into the tissues.

Although the foregoing explanation appears logical, critical studies of the blood serum made just before and just after diuresis have shown no measurable increase in the albumin. It seems probable, therefore, that this change in plasma proteins is but one of several factors responsible for the edema.

Dr. Killingsworth is fellow of the Otho S. A. Sprague Memorial Institute.

Aided by a grant from the Lyophile serum fund of the Abington Memorial Hospital.

From the nephritic services of the Children's Memorial Hospital of Chicago and the Children's Hospital of Philadelphia.

Dr. Joseph Calvin and Dr. H. H. Boyle allowed us to treat their patients, and Dr. Gladys Dick and Dr. Sidney O. Levinson of the Samuel Deutsch Serum Center gave us technical assistance in preparing portions of the serum.

Because of the loss of serum albumin and of its possible significance in reducing the water excretion, many substances have been injected into the blood stream in an attempt to increase its power to hold water and to remove it from the tissues. Among these have been hypertonic solution of dextrose and of sucrose, solution of acacia, whole blood, and hypertonic salt solution. Although some help has been obtained from these agents, not one of them has proved uniformly and continuously successful.

In the case of whole blood, the amount it is possible to inject is limited by the fact that, as a rule, before sufficient protein can be given an excess of red blood cells is provided. However, it has been noted that a relatively small transfusion often seems to initiate a sizable diuresis.

During the past few years our attention has been called to the possibility of treatment with blood serum

and a commercial solvent. Serum processed by this method becomes a dry, porous powder which may be redissolved in one fourth or less of its original volume of water or serum. When large amounts of serum were to be stored for intravenous use, it was necessary to obtain pools of serum from many adults. This serum was then processed in pools, redissolved, filtered for the removal of fat globules and again processed, after which it was safe for intravenous use in fourfold concentration.²

From the earliest development of this method it was obvious that such concentrated serum had many possible uses. Among these uses, the restoration of serum protein values and the raising of the oncotic pressure of the blood serum for its dehydrating effect on localized or generalized collections of extracellular fluid were perhaps the most obvious. In order to test the therapeutic possibilities of such concentrated serum, two

types of patients were selected at the Children's Hospital of Philadelphia: infants with hydrocephalus (reported elsewhere³) and children with lipid nephrosis and edema.

Our observations provided us with a logical reason to attempt the administration of larger or more concentrated doses of serum, after which consultation between the Philadelphia and the Chicago authors took place and resulted in this combined study.

REPORT OF CASES

The following case reports refer strictly to patients with nephrosis. We were able to treat one patient with mild and eight patients with advanced nephrotic edema. In none of the hundreds of urinalyses made for these patients were enough red blood cells found to produce a posi-

tive benzidine test on the centrifuged sediment, as such an observation in our clinics would rule out the diagnosis of nephrosis. Tests of renal function except for excretion of water were approximately normal in all but case 6. There was evidence that secondary renal damage was occurring in the kidneys of this patient after many years of illness. All the patients except the first presented marked anasarca. All presented marked albuminuria and cylindruria not associated with elevation of the systemic blood pressure. Clinical observations are therefore omitted from the case reports.

CASE 1.—A. C., a girl aged 6 years, was admitted to the Children's Hospital of Philadelphia Jan. 8, 1937, with slight edema of the eyes and the ankles. She had typical nephrosis,

2. Mudd, Stuart; Florsdorf, E. W.; Eagle, Harry; Stokes, Joseph, Jr., and McGinness, Aims C.: The Preservation and Concentration of Human Serum for Clinical Use, *J. A. M. A.* **107**:956-959 (Sept. 19) 1936.

3. Several infants with hydrocephalus were treated with marked reduction of intracranial tension lasting many weeks (Hughes, Joseph; Mudd, Stuart, and Strecker, E. A.: Treatment of Increased Intracranial Pressure by Concentrated Human Lyophile Serum, *Tr. Am. Neurol. A.* **62**: 118-123, 1936).

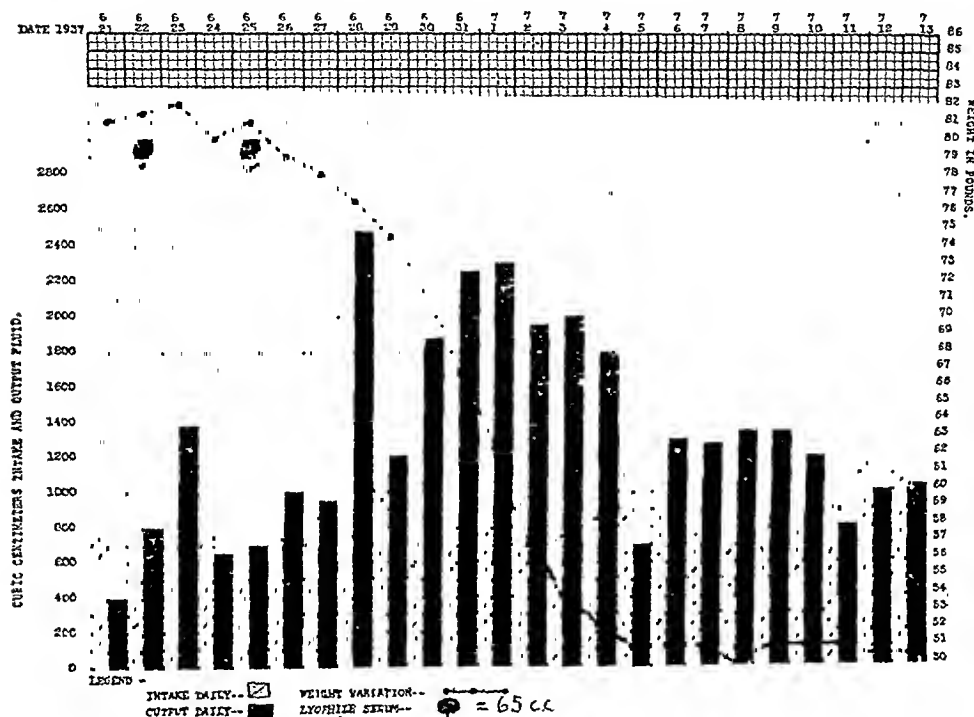


Fig. 1 (case 2).—Complete diuresis, with loss of 32 pounds (60 per cent of normal weight) in two weeks. Two small injections were given. The patient completely recovered, and the urine was normal.

alone. During this time large doses, 100 cc., of convalescent scarlet fever serum were given intravenously at the Children's Memorial Hospital to nephrotic patients who had pneumococcic peritonitis as a complication (to be reported elsewhere). It was frequently observed that, in addition to an immediate drop in temperature, spectacular diuresis was obtained. The explanation for this result was not obvious. It was felt that it might be an immune reaction, an antitoxic effect or possibly a replacement in the blood of some deficient factor.

With the development of the lyophile process by Florsdorf and Mudd¹ in 1934, a method was made available not only for the preservation of serums and other biologic materials but for the concentration of such products. The lyophile process consists essentially in the vacuum dehydration of material previously frozen at a low temperature in a bath of carbon dioxide ice

1. Florsdorf, E. W., and Mudd, Stuart: Procedure and Apparatus for Preserving in "Lyophile" Form of Serum and Other Biological Substances, *J. Immunol.* **29**: 389-425 (Nov.) 1935.

which had been treated for four years by different methods. During this time she had undergone repeated attacks of major edema.

On January 15 she was given 25 cc. of three times concentrated human serum intravenously. In four days she lost all the edema, 2 pounds (907 Gm.). She then began to gain in weight, and on January 23 she was given 125 cc. of whole

followed. The albuminuria slowly decreased, and on August 2 urinalysis gave negative results. At the time of writing the patient is clinically well (fig. 2).

CASE 4.—A. M., a Negro girl aged 4 years, was admitted to the Cook County Hospital on June 24, 1937, with nephrosis. Through Dr. Joseph Calvin, we were permitted to treat her with 80 cc. of four times concentrated serum intravenously on June 28. Prompt and complete diuresis followed, with a loss of 7 pounds (3.2 Kg.) in weight. Within one month the urine became normal, and it has remained so.

CASE 5.—G. B., a boy aged 11 years, was admitted to the Children's Memorial Hospital July 14, 1937, with nephrosis. He had been under observation since February 27, both in the hospital and in the dispensary. In addition to the nephrosis, he had definite hypothyroidism. It had been found that the administration of from 2 to 3 grains (0.12 to 0.18 Gm.) of thyroid extract daily would control his tendency toward edema. One week before admission the thyroid medication was discontinued, with the result that he gained 7 pounds (3.2 Kg.) in weight in edema fluid. On the day of entrance he was given 65 cc. of four times concentrated serum intravenously and no other treatment. In the next seven days he lost all this accumulated fluid in complete diuresis. He was then kept edema free by means of 3 grains of thyroid extract administered daily (fig. 3).

CASE 6.—F. M., a Negro girl aged 5 years, with nephrosis, who had been observed most of the time since 1935 in the Children's Memorial Hospital, had recently shown signs of secondary renal sclerosis, marked reduction in renal function, fixation of the specific gravity in the low range, retention of

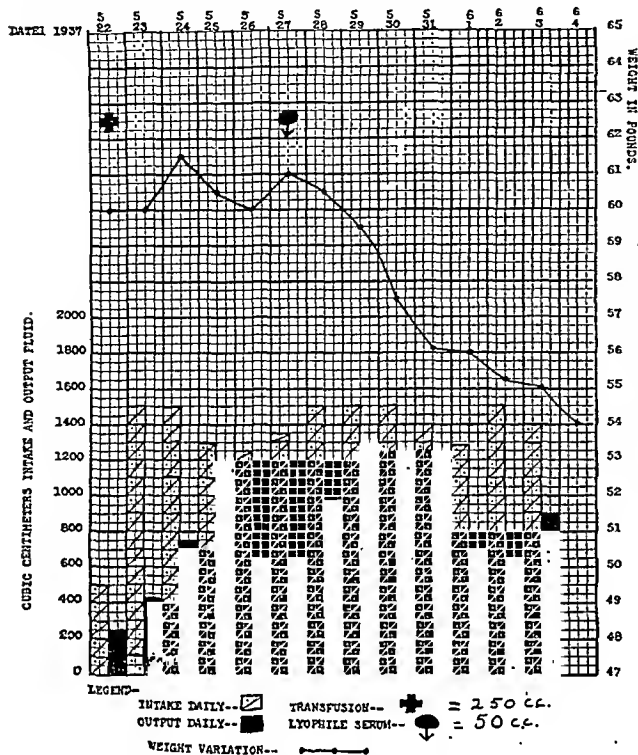


Fig. 2 (case 3).—Complete diuresis, with loss of 7½ pounds (23 per cent of normal weight), following transfusion of 250 cc. of blood and one injection of lyophile serum. The patient made a complete recovery, with normal urine, in one month and is clinically well at the time of writing.

blood serum, with no perceptible change in her weight. Two days later 35 cc. of four times concentrated serum was administered, after which she again lost all her edema. She remained edema free until discharge from the hospital, but her subsequent course is not known. No change in serum proteins was noted.

CASE 2.—M. Y., a girl aged 8 years, was admitted to the Children's Memorial Hospital on April 13, 1937, with the usual symptoms of nephrosis. This was her first attack. There was a continuous gain in weight for forty-two days, her weight increasing from 64 pounds to 82 pounds (29 to 37 Kg.), and various treatments were tried ineffectually.

On May 23, 65 cc. of four times concentrated human serum was given intravenously. After a slight loss in weight (fig. 1), the weight again rose, and accordingly the dose was repeated on May 25. Complete diuresis, with the loss of 32 pounds (14.5 Kg.), followed. The patient was discharged in good condition except for albuminuria on June 16.

She remained symptom free for six weeks and then had a less severe attack of edema, resulting in spontaneous diuresis. After this attack the albumin gradually disappeared and she remained clinically well.

CASE 3.—C. P., a boy aged 7 years, had the typical picture of nephrosis May 1, 1937. After three weeks' observation at home, he entered the Evanston Hospital on May 22. On this day a transfusion of 250 cc. of whole blood was given. The weight fell somewhat but again increased, and on May 27 he was given 50 cc. of four times concentrated serum intravenously. Prompt complete diuresis, with the loss of 8 pounds (3.6 Kg.),

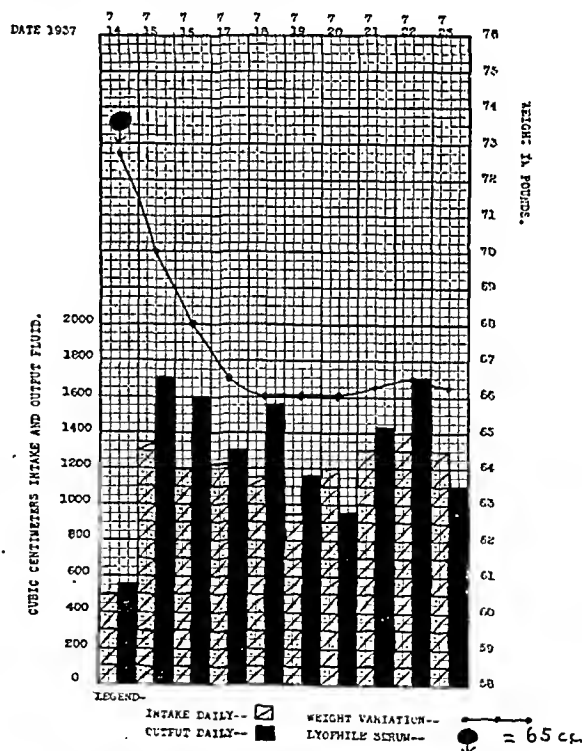


Fig. 3 (case 5).—Complete diuresis, with loss of 7 pounds (10 per cent of normal weight), following one injection of lyophile serum. The fluid eliminated had accumulated through interruption of thyroid medication; the patient was definitely hypothyroid in type.

nitrogenous substances, increased blood pressure and an unusual disturbance in her mineral metabolism, with a reduction of the blood. On July 3 and 8 she was given injection of 65 cc. She also had glycosuria without hyperglycemia.

While edematous, though still in a stable state of water balance, she was given on June 22, 1937, a transfusion of whole blood. On July 3 and 8 she was given injections of 65 cc.

of four times concentrated serum intravenously. No perceptible effect was noted on the weight or the urinary output. At the time of writing she is unimproved and is being observed in a convalescent home (fig. 4).

CASE 7.—J. F., a white boy aged 6 years, with nephrosis, had been observed in the Children's Memorial Hospital for a period subsequent to July 11, 1934. On July 7, 1937, he was readmitted with an infected throat and generalized edema. On July 7, 9, 15 and 28 he received 65 cc. of four times concentrated serum intravenously. The chart shows a possible delayed response, but since edema persisted we cannot be sure of any beneficial result. No more serum was available. The patient afterward died of septicemia with pneumococcal peritonitis. Autopsy showed the typical appearances of lipid nephrosis in addition to those of the terminal infection.

CASE 8.—N. T., a boy aged 3 years, was admitted to the Children's Memorial Hospital with nephrosis of one month's duration. On July 26, 1937, he was given 65 cc. of four

mately 30 per cent of her normal weight, in edema fluid. All symptoms of nephrosis have since disappeared and the urine is normal.

TECHNIC OF ADMINISTRATION

The lyophile serum is distributed in sterile bottles marked as to the number of cubic centimeters of serum from which the dried powder was derived. It had previously been found that this powder could be dissolved in one fourth its original volume of distilled water. This was the concentration used in our first cases. Later it was found that the same amount of compatible blood serum would dissolve the powder, so that a concentration of five times could be used. This made a thick, honey-like, syrupy solution, which could be injected directly with little difficulty by means of what we designate in our hospitals as a "scalp transfusion" set (fig. 5) or with a simple 30 or 50 cc. Luer syringe. The size of the needle used depended on the caliber of the patient's vein, a 20 or a 22 gage needle usually being satisfactory. Occasionally, owing to the massive edema present, it was necessary to cut down on either the great saphenous vein at the ankle or on one of the veins in the cubital fossa. However, the superficial jugular vein may be used safely.

The concentrated serum was injected slowly, not more than 5 cc. a minute. When a reaction occurred with the first dose of serum, all subsequent injections contained from 3 to 5 minims of solution of 1:1,000 epinephrine hydrochloride. It is necessary to state here that care must be exercised to prevent this concentrated serum from escaping into the tissues, as it is quite painful, causing rapid and intense local swelling at a

site at which it is spilled. The serum when accidentally injected into the tissues caused no necrosis or slough. Venous thrombosis did not follow the injections.

Because there are often large fat globules in the lyophile serum, it is safer to pass it through a coarse filter (Berkefeld N) to prevent the possibility of fat embolism. All serum should be freshly prepared with distilled water or compatible serum and used immediately.

It was felt that until the proper dose was determined by experience it would be safer to use frequent small injections. Accordingly, we did not in this series exceed 80 cc., or the equivalent of about 320 cc. of normal serum. It was noted that even this small amount apparently induced diuresis in some of the patients.

Reactions to the serum were usually mild and febrile and lasted for only a few hours, although in two cases sharp reactions accompanied by chills and high fever were seen.

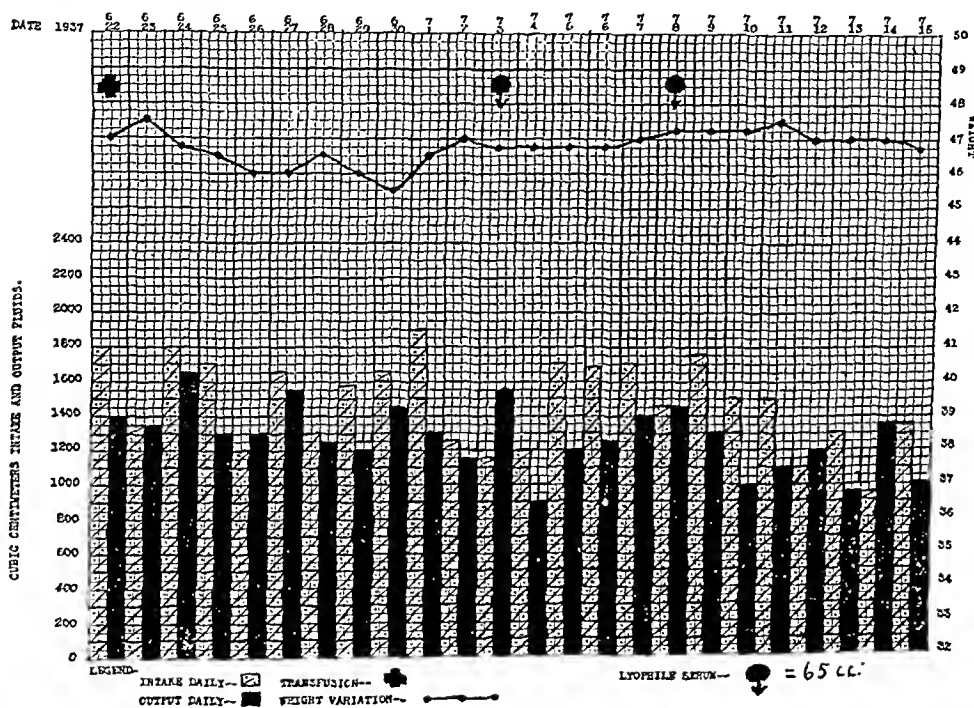


Fig. 4 (case 6).—No response to therapy. The patient had secondarily damaged kidneys, with glycosuria and impaired mineral metabolism.

times concentrated serum intravenously. Two days later the symptoms of peritonitis developed, and erysipeloid cutaneous lesions appeared on the thighs and the abdomen. On July 30, 100 cc. of convalescent scarlet fever serum was injected with 65 cc. of concentrated blood serum. The pain and fever subsided, but no diuresis occurred. The administration of concentrated serum was repeated on August 5, in the same dose, with no benefit. An abdominal paracentesis gave some relief on August 11.

This patient finally died in another attack with sepsis.

CASE 9.—G. P., a girl aged 3 years, was admitted to the Children's Memorial Hospital on Feb. 7, 1938, with a typical history and symptoms of nephrosis, which began the first week of January. During the succeeding two months she gained approximately 15 pounds (6.8 Kg.) in spite of various efforts to reduce her edema. Two days after admission she was given a transfusion of 150 cc. of whole blood, after which her weight increased $3\frac{1}{2}$ pounds (1.5 Kg.). On February 25 she was given 30 cc. of four times concentrated lyophile serum, and a second injection of 20 cc. of the same material was given on February 26. Diuresis, which resulted in a loss of 10 pounds (4.5 Kg.), began after the first injection. She was discharged edema free on March 2, 1938, having lost 10 pounds, approxi-

COMMENT

Critical study of the use of this method seems to indicate that some diuretic effect results from the intravenous injection of human lyophile serum as we used it. It is equally obvious that the method used is not completely satisfactory, as the treatment failed in three of our nine cases. These failures may be dependent on the severity of the condition, inadequate dosage or an unknown complicating factor.

Serum Protein Values Taken Before and After Administration of Lyophile Serum

Case No.	Amount of Serum Used, Cc.	Total Proteins *		Albumin		Globulin	
		Before	After	Before	After	Before	After
2	130	3.3	3.79	1.4	1.7	1.9	2.09
3	50	3.67	4.27	1.86	1.66	1.81	2.61
4	80	5.35	6.1	2.72	4.0	2.63	2.1
5	65	3.5	4.7	1.6	1.7	1.9	3.0
6	130	4.2	4.4	2.1	2.0	2.1	2.4
7	195	3.6	2.9	1.7	1.2	1.9	1.7
8	315	2.8	3.4	1.1	1.2	1.7	2.2

* The serum protein values are in milligrams per hundred cubic centimeters, calculated in the regular chemical manner (not refractometric). The figures here listed are for already concentrated serum, each cubic centimeter of concentrated serum representing from 4 to 5 cc. of original liquid serum.

We fully realize that spontaneous diuresis occurs frequently with nephrosis and that some of our apparently good results might have been due to a coincidental renal crisis. On the other hand, it can hardly have been fortuitous that in six of the first nine cases serum had been injected on the day before the diuresis began. Furthermore, the results in case 5 can hardly be explained on the basis of chance occurrence. The patient, who had been kept at a stationary weight for several weeks by thyroid extract, was allowed to become edematous by the withdrawal of the medication. While he was still increasing in weight at the rate of 1 pound (453 Gm.) daily, serum was administered. This medication was immediately followed by the occurrence of complete diuresis.

It is difficult to conclude that the effects noted were due to a strictly quantitative osmotic action of the serum. If such were the case, one would hardly expect the diuretic effect to go on for many days, until the edema was completely eliminated, without replenishment with more concentrated serum protein. It is suggested, therefore, that in addition to its osmotic action the serum when favorable results are seen supplies some substance or substances which set off the patient's own mechanism of diuresis.

The accompanying table, showing the blood protein values before and two days after injections, is given to demonstrate that the diuresis could not have been due to the mere replacement of serum proteins. It will be noted that the increase, particularly in the albumin fraction, was never of sufficient degree to be significant.

The fact that four of the patients made a complete recovery, including the secretion of normal urine, supports the idea that the treatment may have initiated some unknown physiologic response. Similar recoveries have been observed by many clinicians after spontaneous renal crises. In fact, the urine may become permanently normal within two days of the beginning of such a process.

The delayed and incomplete response shown in case 7 suggests that if more serum had been available the result might have been more striking.

In the two patients who showed no perceptible response, there were complicating factors worth noting. Patient 6 had severely damaged kidneys, as shown by the very poor results of function tests. In addition, the sugar and the mineral metabolism, factors of considerable importance in maintaining the water balance of the body, were severely disturbed. Patient 8 was dangerously ill with fatal pneumococcic peritonitis and septicemia.

The mere intravenous injection of a "water hungry" protein may explain in part the favorable responses, but it is probable that other factors are present which must be considered and investigated. More serum will be available in the future, with which a more exhaustive study from the clinical and the chemical standpoint will be made.

SUMMARY AND CONCLUSIONS

In six of nine patients with typical lipid nephrosis who were treated during the edematous phases with concentrated (lyophile) human blood serum, complete and immediate diuresis took place. Delayed and incomplete diuresis occurred in one patient. In two patients

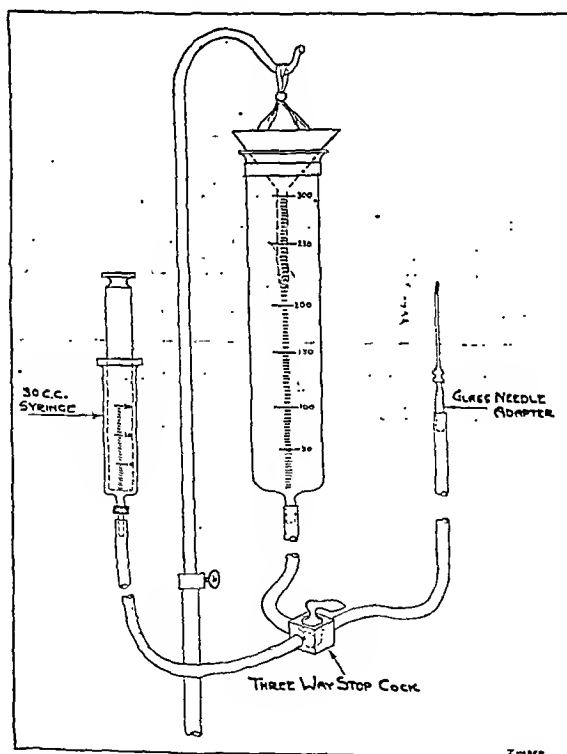


Fig. 5.—Scalp transfusion set.

no beneficial results were noted. Four patients not only lost their edema but had normal urine within a few weeks of treatment and have been clinically well to the time of writing.

These encouraging but conflicting results suggest the need for further investigation as to the physiologic mechanism involved and as to the optimum dose.

The patients with a favorable response lost weight in a way similar to that in which weight is lost in a spontaneous renal crisis; this suggests that the process is initiated in some way by the treatment.

FACTORS IN NEONATAL DEATHS

HERMAN N. BUNDESEN, M.D.

President, Chicago Board of Health

WILLIAM I. FISHBEIN, M.D.

O. A. DAHMS, M.D.

EDITH L. POTTER, M.D.

AND

WALTER VOLKE, B.S.

CHICAGO

Although there has been a definite reduction in mortality throughout the United States for infants under 1 year of age during the last twenty years, but little reduction has occurred in mortality for infants under 2 weeks of age. A further reduction in neonatal mortality will depend on a determination of the factors responsible for the deaths.

METHOD OF INVESTIGATION

Our investigation of the deaths of infants¹ showed that a large majority of death certificates in Chicago did not contain the true cause of death. The true cause in many cases was not known and could not be established without a satisfactory necropsy. During 1936 a campaign was undertaken to increase the number of satisfactory necropsies on infants.

TABLE 1.—Five Major Causes of Death in Infants
During 1936 and 1937

	Pre- mature	Full Term	Total	Per Cent Total Autopsies
I. Intracranial hemorrhage.....	180	107	287	22.7
II. Congenital malformations ²	62	101	163	13.6
III. Pneumonia.....	46	38	84	6.1
IV. Asphyxia.....	42	23	65	6.2
V. Undetermined—that is, without demonstrable pathologic lesions other than atelectasis.....	320	42	362	

By carefully studying the anatomic diagnoses, clinical records and laboratory results, accurate data concerning causes of infant deaths were obtained. Cerebral hemorrhage, congenital malformations, pneumonia and asphyxia were found among the leading causes of death. Many neonatal deaths occurred in premature infants without demonstrable pathologic lesions other than atelectasis. These causes did not appear with corresponding frequency on the death certificates when necropsies were not performed.

During 1936 and 1937 there were 3,725 deaths in infants under 1 year of age. Satisfactory necropsies were performed on 1,642.^{3a} The causes of death as determined by these satisfactory necropsies and by careful investigation of the clinical records and laboratory results are used mainly as the basis of this study. The five major causes of death during these two years are given in table 1.

An apparent increase in deaths from certain conditions is explained by the greater percentage of satisfactory necropsies obtained during 1937.

Nearly all the deaths to which complications of pregnancy or labor contribute occur within the first two weeks of life and usually within the first few days.

If an infant dies after living one month or more, it is generally safe to assume that the death is not the result of antenatal or intranatal complications. Therefore, in studying the effect of antenatal and intranatal factors on neonatal mortality, we have used the group of full term infants who died between the ages of 1 and 11 months inclusive² as a basis of comparison with all infants (both premature and full term) who died during the first two weeks of life.³ The 146 deaths of premature infants which occurred between the ages of 1 and 11 months inclusive, out of the 3,725 total deaths, were so few that they are not included in the analysis; their inclusion would have made but slight changes in the figures and greatly complicated the presentation.

The small group of infants who died in the age period from 2 weeks to 1 month, as well as the prematurely born infants who died after one month, is considered by us as on the borderline; that is, there is less certainty as to whether antenatal and intranatal complications were a factor in their deaths. Therefore, the group in the age period from 2 weeks to 1 month is not considered in the comparison.

In the analysis all the 2,283 infants (both premature and full term) who died in the first two weeks are compared with the 1,109 full term infants who died between the ages of 1 and 11 months inclusive. In the case of infants who died in the first two weeks, a detailed study is made of the factors possibly responsible for death. This is done first by determining the number of and comparing the incidence of factors associated with pregnancy and labor for (a) mothers whose infants died from particular causes, such as intracranial hemorrhage, as shown by satisfactory necropsies, and (b) mothers whose infants died from all causes.

It is done secondly by determining the number of and comparing the incidence of factors associated with pregnancy and labor for (a) mothers whose prematurely born infants died and (b) mothers whose full term infants died.⁴

These comparisons have been made to determine if possible (a) factors that are particularly important in contributing to all neonatal deaths (of both full term and premature infants); (b) factors that are particularly important in contributing to neonatal deaths of premature infants; (c) factors that are particularly important in contributing to neonatal deaths of full term infants, and (d) factors that are particularly important in contributing to neonatal deaths of both premature and full term infants from such specific causes as intracranial hemorrhage, pneumonia and asphyxia, and in cases in which there was no demonstrable pathologic lesion.

The ten antenatal or intranatal factors discussed are those which experience has indicated might have an important bearing on neonatal deaths. These factors are (1) the complications of pregnancy, of labor or of both; (2) operative procedures; (3) the use of solution of posterior pituitary; (4) the use of analgesics; (5) dry labor; (6) breech presentation; (7) multiple births; (8) antepartum care; (9) parity, and (10) syphilis. The incidence of these factors is shown in table 2.

2. In this group are included the infants who were 30 or more days and less than 1 year of age at the time of death.

3. This group was used because the necessary information was available for comparison and could not be secured in reference to living infants. The group was considered a survivors of the obstetric hazards and is sufficiently large to be representative of the living infants.

4. The differences in percentages were considered significant only in those instances in which they were at least three times the standard error. In many cases the differences were from four to twelve times the standard error.

1. Bundesen, H. N.; Fishbein, W. I.; Dahms, O. A., and Potter, Edith L.: Factors Responsible for Failure Further to Reduce Infant Mortality, J. A. M. A. 109: 337-343 (July 31) 1937.

1a. Satisfactory necropsies were performed in 35 per cent of the infants who died during 1936, in 53 per cent during 1937, and in 83.5 per cent up to June 21, 1938.

In a discussion of the causes of deaths in the neonatal period, stillbirths should be included; an analysis of stillbirths will be presented in a subsequent paper.

1. TOTAL COMPLICATIONS OF PREGNANCY, OF LABOR OR OF BOTH

In the group comprising 1,048 infants, 468 mothers had complications of pregnancy, 467 had complications of labor and 113 had complications of pregnancy and labor combined.

Complications of pregnancy, of labor or of both occurred in the mothers of 45.8 per cent of the 2,283⁵ infants who died under the age of 2 weeks, 46.3 per cent of the 1,401 premature infants who died under 2 weeks, 45.2 per cent of the 882 full term infants who died under 2 weeks and 17.4 per cent of the 1,109 full term infants who died between the ages of 1 and 11 months inclusive during 1936 and 1937.

The frequency of maternal complications in the deaths from intracranial hemorrhage (56.6 per cent), pneumonia (58.4 per cent) and asphyxia (60 per cent) in the neonatal period is greater than the frequency of such complications in deaths from all causes in the neonatal period (45.8 per cent). This would indicate that complications of pregnancy and labor are particularly important in neonatal deaths from intracranial hemorrhage, pneumonia and asphyxia. Although complications seem to occur less frequently when the infant dies without any demonstrable pathologic lesion (42 per cent), the difference is within the range of chance.

(a) *Complications of Pregnancy.*⁷—Complications of pregnancy occurred in the mothers of 20.5 per cent of the 2,283 infants who died under the age of 2 weeks, 26.5 per cent of the 1,401 premature infants who died under 2 weeks, 10.9 per cent of the 882 full term infants

TABLE 2.—Incidence of Various Antenatal and Intranatal Factors in General Groups of Infant Deaths with Special Reference to Leading Specific Causes of Neonatal Deaths, 1936 and 1937*

Factors	Intracranial Hemorrhage		Pneumonia		Asphyxia		No Demonstrable Pathologic Lesion		Premature Deaths Under Two Weeks		Full Term Deaths Under Two Weeks		Total Deaths Under Two Weeks		Full Term Deaths Between 1 and 11 Months Inclusive	
	Num-ber of Cases	Per Cent of Known Cases	Num-ber of Cases	Per Cent of Known Cases	Num-ber of Cases	Per Cent of Known Cases	Num-ber of Cases	Per Cent of Known Cases	Num-ber of Cases	Per Cent of Known Cases	Num-ber of Cases	Per Cent of Known Cases	Num-ber of Cases	Per Cent of Known Cases	Num-ber of Cases	Per Cent of Known Cases
Total cases.....	237		84		65		362		1,401		882		2,283		1,109	
Total cases with complica-tions of pregnancy, of labor or of both.....	134	56.6	49	58.4	39	60.0	132	42.0	649	46.3	399	45.2	1,048	45.8	193	17.4
	44	18.6	26	31.0	8	12.3	88	24.3	372	25.5	96	10.9	468	20.5	90	8.1
	67	28.3	22	26.2	24	36.9	62	17.1	242	17.3	225	25.5	467	20.4	93	8.4
Pregnancy and labor.....	23	9.7	1	1.2	7	10.8	12	3.3	35	2.5	78	8.8	113	4.9	10	0.9
Operative intervention.....	88	37.1	22	26.2	27	41.5	56	15.5	263	18.8	304	34.6	567	24.8	110	10.0
Solution of posterior pitu-itary used.....	7	3.0	3	3.6	3	4.6	7	2.0	33	2.4	47	5.3	80	3.5	19	1.8
Analgesics used.....	25	10.6	8	9.5	12	18.4	42	11.6	154	11.0	109	12.5	263	11.6	33	3.0
Very labor.....	13	5.5	2	2.4	3	4.6	13	3.6	43	3.1	27	3.1	72	3.2	2	0.2
	36	15.6	9	10.7	10	15.4	62	17.1	243	17.3	100	11.0	243	10.6	38	3.6
	17	7.0	3	3.6	6	9.0	63	17.4	186	13.3	19	2.2	205	9.1	29	2.7
Maternal care.....	85	36.6	29	34.6	23	35.4	141	39.4	573	40.9	283	32.1	856	37.0	476	42.0
Primipara.....	69	29.5	15	18.0	21	32.3	95	26.2	302	21.6	205	23.4	507	22.2	164	14.8
Positive serologic test for syphilis.....	8	3.4	4	4.8	0	0.0	9	2.5	37	2.6	12	1.4	49	2.1	27	2.4

* Percentages given are those of the cases in which the data were available.

The difference between 45.8 per cent and 17.4 per cent is significant; it indicates that complications of pregnancy, of labor or of both are important factors in the deaths of infants under 2 weeks.

Such complications did not occur any more often in mothers of premature infants who died neonatally (46.3 per cent) than in mothers of full term infants who died neonatally (45.2 per cent).

During 1936 and 1937 there were 237 neonatal deaths from intracranial hemorrhage, eighty-four from pneumonia, sixty-five from asphyxia and 362 without any demonstrable pathologic lesion.

Complications of pregnancy, of labor or of both occurred in the mothers of (a) 56.6 per cent of the 237 infants who died under 2 weeks⁶ from intracranial hemorrhage, (b) 58.4 per cent of the eighty-four infants who died under 2 weeks from pneumonia, (c) 60 per cent of the sixty-five infants who died under 2 weeks from asphyxia, and (d) 42 per cent of the 362 infants who died under 2 weeks without demonstrable pathologic lesions.

who died under 2 weeks and 8.1 per cent of the 1,109 full term infants who died between 1 and 11 months inclusive.

The proportion of complications of pregnancy in the mothers of both premature and full term infants who died under 2 weeks is more than twice as great as in the mothers of the infants who died between 1 and 11 months inclusive. Thus, the proportion of the complications of pregnancy in the mothers of premature infants (26.5 per cent) who died under 2 weeks is more than twice as great as in the mothers of full term infants (10.9 per cent) who died in the same period. These figures indicate that the complications of pregnancy are important in deaths during the first two weeks, particularly in deaths of premature infants.

Complications of pregnancy occurred in the mothers of (a) 18.6 per cent of the 237 infants who died from intracranial hemorrhage, (b) 31 per cent of the eighty-four infants who died from pneumonia, (c) 12.3 per cent of the sixty-five infants who died from asphyxia and (d) 24.3 per cent of the 362 infants who died in which demonstrable pathologic lesions were absent.

The frequency of complications of pregnancy is about as great for all deaths during the neonatal period (20.5

7. By this we refer only to complications occurring before the onset of labor.

5. This group is made up of 1,401 premature infants and of 882 full term infants.

6. In the following pages the discussion of deaths from intracranial hemorrhage, pneumonia and asphyxia and those in which there was no demonstrable pathologic lesion when combined refer to deaths under 2 weeks for which the cause was determined by satisfactory necropsy.

per cent) as for deaths from intracranial hemorrhage (18.6 per cent). Such complications seem to be more important in the deaths from neonatal pneumonia (31 per cent), and less important in asphyxia (12.3 per cent). They are possibly more important in the infants who died without demonstrable pathologic lesions (24.3 per cent) than in the total deaths under 2 weeks.

(b) *Complications of Labor.*⁸—Complications of labor occurred in the mothers of 20.4 per cent of the 2,283 infants who died under 2 weeks, 17.3 per cent of the 1,401 premature infants who died under 2 weeks, 25.5 per cent of the 882 full term infants who died under 2 weeks and 8.4 per cent of the 1,109 full term infants who died between 1 and 11 months inclusive.

These differences in the percentages indicate that complications of labor are important factors in neonatal mortality in general and are more important in the deaths of full term infants than in those of premature infants.

Complications of labor occurred in the mothers of (a) 28.3 per cent of the 237 infants who died from intracranial hemorrhage, (b) 26.2 per cent of the eighty-four infants who died from pneumonia, (c) 36.9 per cent of the sixty-five infants who died from asphyxia and (d) 14.4 per cent of the 362 infants who died without demonstrable pathologic lesions.

In the deaths from intracranial hemorrhage and asphyxia, the frequency of the complications of labor is greater than the frequency of such complications in the total group of 2,283 deaths under 2 weeks. Even in the infants who died of pneumonia, complications of labor occurred with greater frequency than in the infants who died between 1 and 11 months inclusive.

(c) *Complications of Both Pregnancy and Labor.*⁹—Complications of both pregnancy and labor occurred in the mothers of 4.9 per cent of the 2,283 infants who died under 2 weeks, 2.5 per cent of the 1,401 premature infants who died under 2 weeks, 8.8 per cent of the 882 full term infants who died under 2 weeks and 0.9 per cent of the 1,109 full term infants who died between 1 and 11 months inclusive.

Obviously, complications of pregnancy and labor when they occur together are important in the production of neonatal deaths. Furthermore, complications of pregnancy and labor together seem to be more important in the deaths of full term infants than in the deaths of premature infants.

Complications of pregnancy and labor occurred together in the mothers of (a) 9.7 per cent of the 237 infants who died from intracranial hemorrhage, (b) 1.2 per cent of the eighty-four infants who died from pneumonia, (c) 10.8 per cent of the sixty-five infants who died from asphyxia and (d) 3.3 per cent of the 362 infants who died without demonstrable pathologic lesion.

Thus complications of pregnancy and labor when they occur together are particularly important in the production of deaths from intracranial hemorrhage and asphyxia and are relatively less important in the production of deaths without any demonstrable pathologic lesion and in pneumonia.

Conclusion.—The complications of pregnancy and those of labor occurring alone or together seem to be

responsible, in part at least, for deaths in infants under 2 weeks of age. The complications of pregnancy are particularly important in the production of deaths in premature infants, while the complications of labor, or combined complications of pregnancy and labor, are more liable to contribute to deaths in full term infants.

The complications of pregnancy also seem to play a part in the deaths of infants who, at necropsy, are without demonstrable pathologic lesions. Most of these infants are premature. Complications of pregnancy also are a factor in pneumonia, while the complications of labor seem to be important in the deaths from pneumonia, asphyxia and intracranial hemorrhage.

A further reduction of deaths in premature infants and deaths from pneumonia in infants under 2 weeks may be secured by providing adequate antepartum care to avoid the complications of pregnancy or, at least, by treating such complications properly and promptly. By providing skilled care during delivery, the ill effects of the complications of labor may be diminished or abolished; thus perhaps a further reduction in deaths from asphyxia and intracranial hemorrhage may be secured.

"The desirable attendant for the pregnant woman is a physician adequately trained and experienced in obstetrics and so aware of his limitations that, when emergencies arise which are beyond his competence, he will not delay in securing help."¹⁰

2. OPERATIVE PROCEDURES

Under the heading "operative procedures" are included any technics or operations exclusive of episiotomy other than those used in the conduct of normal, spontaneous labor and delivery; for example, such procedures as mechanical induction of labor, forceps delivery, version and extraction and cesarean section.

Operative procedures were employed for the mothers of 24.8 per cent of the 2,283 infants who died under 2 weeks, 18.8 per cent of the 1,401 premature infants who died under 2 weeks, 34.5 per cent of the 882 full term infants who died under 2 weeks, and 10 per cent of the 1,109 full term infants who died between 1 and 11 months inclusive.

Thus operative procedures were employed with greater frequency for the mothers of infants who died under 2 weeks than for those who died between 1 and 11 months inclusive and may be an important factor associated with neonatal deaths. Such procedures are more frequent in the neonatal deaths of full term infants than of premature infants.

Operative procedures were employed for the mothers of (a) 37.1 per cent of the 237 infants who died from intracranial hemorrhage, (b) 26.2 per cent of the eighty-four infants who died from pneumonia, (c) 41.5 per cent of the sixty-five infants who died from asphyxia and (d) 15.5 per cent of the 362 infants who died without demonstrable pathologic lesions.

Comparison of these four percentages with the 24.8 per cent of operative procedures in the total 2,283 neonatal deaths seems to indicate that operative procedures are especially frequent in association with deaths from intracranial hemorrhage and asphyxia but are not as frequent with deaths from the pneumonias or without demonstrable pathologic lesions.

8. By this we refer only to complications occurring from the onset of labor to the birth of the infant.

9. By complication of both pregnancy and labor is meant any abnormal condition occurring during pregnancy, in addition to some abnormal condition during labor.

10. Galdston, Igor: *Maternal Deaths: The Ways to Prevention*, New York, Commonwealth Fund, 1937, p. 32.

(a) *Operative Procedures Together with Complications of Pregnancy, of Labor or of Both.*—How often do complications of pregnancy, of labor or of both and operative procedures occur together when the infant dies under 2 weeks? Which is the more important factor in these neonatal deaths—the operative procedures or the complications?

When complications of pregnancy, of labor or of both occurred, operative procedures were employed in the delivery of 54.2 per cent of the 1,048 infants who died under 2 weeks, 40.5 per cent of the 649 premature infants who died under 2 weeks, 76.5 per cent of the 399 full term infants who died under 2 weeks and 57 per cent of the 193 full term infants who died between 1 and 11 months inclusive.

These figures indicate that, with complications of pregnancy, of labor or of both, operative procedures were employed with almost equal frequency when the infant died between 1 and 11 months inclusive as when the infants died under 2 weeks. If, however, the infants who died under 2 weeks are grouped as premature and as full term infants, mothers had complications with about the same frequency in the two groups. Operative procedures were employed much less frequently in the delivery of premature than in the delivery of full term infants. When the deaths of full term infants only who died under 2 weeks are compared with the deaths of full term infants who died between 1 and 11 months inclusive, it is found that operative procedures were employed more frequently in the delivery of infants who died under 2 weeks, the figures being 76.5 per cent and 57 per cent, respectively.

(b) *Operative Procedures Together with Complications of Pregnancy.*—Operative intervention, together with complications of pregnancy, occurred in the delivery of 23.3 per cent of the 468 infants who died under 2 weeks, 23.7 per cent of the 372 premature infants who died under 2 weeks, 21.9 per cent of the ninety-six full term infants who died under 2 weeks and 8.8 per cent of the ninety full term infants who died between 1 and 11 months inclusive.

This difference between 23.3 per cent and 8.8 per cent indicates that operative procedures together with complications of pregnancy are important in neonatal deaths.

(c) *Operative Procedures Together with Complications of Labor.*—When complications of labor only occurred, operative procedures were employed in the delivery of 76.5 per cent of the 467 infants who died under 2 weeks, 62.8 per cent of the 242 premature infants who died under 2 weeks, 91.2 per cent of the 225 full term infants who died under 2 weeks and 99 per cent of the ninety-three full term infants who died between 1 and 11 months inclusive.

Operative procedures are less often associated with deaths of premature infants under 2 weeks when there were complications of labor than they are with deaths of full term infants under 2 weeks. Furthermore, operative procedures with complications of labor seem to increase the infants' chances of surviving the neonatal period, since there was a greater proportion of operative procedures in the case of infants who died between 1 and 11 months inclusive at whose birth there were complications of labor than there was in the case of the infants who died under 2 weeks at whose birth there were complications of labor.

Conclusion.—Operative procedures in general are frequently associated with neonatal deaths and particularly with those from intracranial hemorrhage and asphyxia. In those cases in which there are complications of pregnancy, death of an infant under 2 weeks is more apt to occur if operative procedures are employed than if not employed. However, this statement must be considered with due reference to the indications for the operative procedures in the case of certain complications.

Operative procedures appear to be beneficial when employed for complications of labor; there are more neonatal deaths after complications of labor without operation than after such complications with operation. Conversely, operative procedures involve a greater risk of death in the neonatal period in cases in which complications of pregnancy occur than in instances in which delivery is permitted to occur spontaneously.

Since operative procedures for the mothers with complications of pregnancy seem to increase the hazard to the infant, careful consideration should be given before any such procedures are employed, and the indications should be duly weighed by the obstetrician. With many complications of pregnancy the operative procedures are justified despite the increased hazard to the infant, since the procedure is performed primarily in the interests of the mother.

Operative procedures for complications of labor, particularly when the infant is born at full term, seem to be a factor in reducing the hazard to the infant during the neonatal period. Since operative procedures in general, however, seem to add to the danger to the infant, only the most skilled type of obstetric technic must be employed for delivery of the infant if the child is to be given the maximum opportunity for survival.

3. SOLUTION OF POSTERIOR PITUITARY

It is generally conceded that the use of solution of posterior pituitary during the first and second stages of labor is, as a rule, hazardous for the infant.

The use of oxytocics, particularly pituitary extract, prior to delivery, is dangerous. The danger is twofold: first, to the mother, as its use has repeatedly been followed by rupture of the uterus; second, to the fetus, as many cases of stillbirth have been caused by this drug due to severe toxic uterine contractions producing violent labor which results in intracranial damage.

Pituitary extract should be considered like dynamite, useful when skilfully and intelligently used at the proper time, but otherwise very dangerous.

The child may be lost as a result of cerebral hemorrhage caused by the rapid forcing of the head into and through the birth canal, or by asphyxia due to compression of the placenta by long-continued uterine contractions.¹¹

In the cases in which the data were available, solution of posterior pituitary was given during the first or second stage of labor to the mothers of 3.5 per cent of the 2,262 infants who died under 2 weeks, 2.4 per cent of the 1,391 premature infants who died under 2 weeks, 5.3 per cent of the 871 full term infants who died under 2 weeks and 1.8 per cent of the 1,062 infants who died between 1 and 11 months inclusive.

These figures seem to show that solution of posterior pituitary was given twice as frequently to mothers of

11. *Maternal Care: The Principles of Antepartum, Intrapartum, and Postpartum Care for the Practitioner of Obstetrics*, American Committee on Maternal Welfare, Chicago, University of Chicago Press, 1937, pp. 51-52.

infants who died under 2 weeks as to mothers of full term infants who died between 1 and 11 months inclusive.

Conclusion.—The use of solution of posterior pituitary during the first and second stages of labor is contributory, at least, to neonatal deaths. It seems particularly a hazard in contributing to deaths of full term infants under 2 weeks of age.

Solution of posterior pituitary when given to mothers during the first or second stage of labor should be administered with the greatest caution and only when the indications have been determined to be proper by the obstetrician.

4. ANALGESICS

The use of analgesics has also been suggested as a possible factor in the production of deaths in infants under 2 weeks.

In the cases in which the data were available, analgesics were given to the mothers of 11.6 per cent of the 2,260 infants who died under 2 weeks, 11.1 per cent of the 1,389 premature infants who died under 2 weeks, 12.5 per cent of the 871 full term infants who died under 2 weeks and 3.1 per cent of the 1,061 infants who died between 1 and 11 months inclusive.

Analgesics were given almost four times as frequently to the mothers of infants who died under 2 weeks as to the mothers of those who died between 1 and 11 months inclusive.

Analgesics were given to the mothers of (a) 12 per cent of the 234 infants who died from intracranial hemorrhage, (b) 9.5 per cent of the eighty-four infants who died from pneumonia, (c) 18.5 per cent of the sixty-five infants who died from asphyxia and (d) 11.7 per cent of the 359 infants who died without demonstrable pathologic lesions.

The administration of analgesics to the mother seems to be more frequent in association with deaths from asphyxia than in association with deaths from all causes in infants under 2 weeks. However, the difference is less than twice the standard error.

Conclusion.—The use of analgesics is an important factor associated with neonatal deaths and may be important in the deaths due to asphyxia. Physicians should bear in mind the threat to the life of the infant produced by the injudicious use of analgesics and not permit the mother's demands for "painless childbirth" to outweigh their good judgment to the degree that they employ drugs to alleviate pain at risk to the infant's life.

5. DRY LABOR

Information concerning dry labor was available for only a part of those deaths occurring during 1937. It was not coded during 1936.

Dry labor occurred in the mothers of 6.3 per cent of the 1,138 infants who died under 2 weeks, 6.3 per cent of the 702 premature infants who died under 2 weeks and 0.4 per cent of the 516 infants who died between 1 and 11 months inclusive.

The frequency of dry labor is greater in association with the deaths of infants under 2 weeks than in association with those of infants between 1 and 11 months inclusive.

Dry labor was present in the mothers of (a) 10 per cent of the 130 infants who died from intracranial hemorrhage, (b) 4.4 per cent of the forty-six infants who died from pneumonia, (c) 5.8 per cent of the fifty-

two infants who died from asphyxia and (d) 5.5 per cent of the 236 infants who died without demonstrable pathologic lesions.

The frequency of dry labor seems to be greater in association with deaths from intracranial hemorrhage than in association with all neonatal deaths. However, the difference is not quite three times the standard error.

Conclusion.—Dry labor may be a factor in the production of neonatal deaths and particularly of those from intracranial hemorrhage. Artificial rupture of the membranes should be done only when indicated and dry labors conducted as skilfully as possible.

6. BREECH PRESENTATION

Breech presentation occurred in the case of 15 per cent of the 2,283 infants who died under 2 weeks, 17.3 per cent of the 1,401 premature infants who died under 2 weeks, 11.3 per cent of the 882 full term infants who died under 2 weeks and 3.4 per cent of the 1,109 full term infants who died between 1 and 11 months inclusive.

Breech presentation occurred with much greater frequency in association with the deaths of infants under 2 weeks than in association with those of infants between 1 and 11 months inclusive.

Breech presentation occurred in the case of (a) 15.4 per cent of the 237 infants who died from intracranial hemorrhage, (b) 10.7 per cent of the eighty-four infants who died from pneumonia, (c) 15.4 per cent of the sixty-five infants who died from asphyxia and (d) 17.1 per cent of the 362 infants who died without demonstrable pathologic lesions.

Breech presentation seems to occur with about the same frequency in association with deaths of infants without demonstrable pathologic lesions, with deaths from asphyxia and intracranial hemorrhage and with deaths from all causes in infants under 2 weeks.

Conclusion.—Breech presentation is a significant factor in the neonatal deaths, especially in neonatal deaths of prematurely born infants.

Breech presentation occurs with greater frequency in the case of premature infants than in the case of full term infants, and the general neonatal mortality is much higher for premature infants than for full term infants. But even in the case of deaths of full term infants under 2 weeks, breech presentation occurred with three times the frequency of its occurrence with the deaths in infants between 1 and 11 months inclusive. Since breech presentation is a factor in these deaths, the need is apparent for especially skilled obstetric care in breech deliveries in order to reduce mortality.

7. MULTIPLE BIRTHS

The births were multiple for 9 per cent of the 2,283 infants who died under 2 weeks, 13.5 per cent of the 1,401 premature infants who died under 2 weeks, 2.2 per cent of the 882 full term infants who died under 2 weeks and 2.6 per cent of the 1,109 infants who died between 1 and 11 months inclusive.

The frequency of multiple births is greater for infants who died under 2 weeks than for those who died between 1 and 11 months inclusive. This difference is produced particularly by the premature infants.

The births were multiple for (a) 7.2 per cent of the 237 infants who died from intracranial hemorrhage, (b) 3.6 per cent of the eighty-four infants who died

from pneumonia, (c) 9.2 per cent of the sixty-five infants who died from asphyxia and (d) 17.4 per cent of the 362 infants who died without demonstrable pathologic lesions.

The percentage of infants who died under 2 weeks without demonstrable pathologic lesions (which group is made up mostly of premature infants) is twice as high as the percentage of deaths of twins and triplets in the group of 2,283 infants who died under 2 weeks.

Conclusion.—Twins or triplets contribute greatly to neonatal mortality because of the large number of multiple pregnancies that terminate prematurely and apparently not because of any other particular condition associated with twins and triplets. That this is probably true is shown by the fact that the number of full term twins who died under 2 weeks is slightly less than the number of full term twins who died between 1 and 11 months inclusive. In other words, a greater percentage of full term twins survive the neonatal period than die, while the reverse is true in the case of premature infants.

Twins or triplets who die during the neonatal period frequently are without demonstrable pathologic lesions. Every possible effort should be made to diagnose multiple pregnancy as early as possible and to use all available methods to prevent its early termination.

"It is generally believed that the second-born twin dies much more often than the first. Our figures show that in 1937 forty-six first-born and sixty-two second-born twins died neonatally.

8. ANTEPARTUM CARE

Most obstetricians believe that adequate antepartum care is a factor in the prevention of both maternal and neonatal mortality. A medical investigator specially trained in this type of work made a personal inquiry to determine in how many cases in which the infant died the mother had adequate antepartum care and then judged whether the care was adequate or inadequate.¹²

Errors may occur in this type of survey because there is no way to check the accuracy of the statements made to the investigator. However, the data seem sufficiently reliable to warrant certain conclusions.

In the cases in which the data were available, there was inadequate or no antepartum care for the mothers of 37.9 per cent of the 2,260 infants who died under 2 weeks, 41.3 per cent of the 1,389 premature infants who died under 2 weeks, 32.5 per cent of the 871 full term infants who died under 2 weeks and 44.9 per cent of the 1,109 infants who died between 1 and 11 months inclusive.

A smaller percentage of mothers of infants who died between 1 and 11 months inclusive received adequate antepartum care than of mothers of those who died under 2 weeks. The percentage of mothers of premature infants who died under 2 weeks who received adequate antepartum care was less than the percentage of mothers of full term infants who died under 2 weeks who received such care.

These figures may seem contradictory. They indicate that one effect of antepartum care is to increase the like-

lihood of carrying gestation to term and, in this way, to improve the infant's chance of survival beyond the neonatal period.

They indicate also, however, that the less antepartum care the mother had the greater were the chances of the infant's surviving the neonatal period. This cannot be true if antepartum care is of any value. Therefore, there must be factors producing neonatal mortality which are not eliminated by antepartum care. In other words, factors enter into these cases which counteract or overcome the benefits derived from proper supervision and management of pregnancy.

To prove that such factors exist, it is necessary to remember that they would appear in the tabulation of deaths with the same frequency as antepartum care; that is, they would occur less frequently for the premature than for the full term infants who died under 2 weeks and still less frequently for the full term infants who died between 1 and 11 months inclusive.

Of the factors examined in this investigation, the use of solution of posterior pituitary before the end of the second stage of labor, complications of labor and operative procedures are shown to occur with the same frequency as adequate antepartum care; that is, they seem less frequent for the premature than for the full term infants who died under 2 weeks and still less frequent for the full term infants who died between 1 and 11 months inclusive. The expected benefits of adequate antepartum care may be offset for the full term infants dying neonatally by injudicious or unindicated procedures during labor or delivery, by complications of labor, by the use of solution of posterior pituitary before the termination of the second stage or by improper operative procedures.

Conclusion.—Antepartum care is valuable because it probably aids in the prevention of prematurity. However, the value of antepartum care may be entirely lost as the result of injudicious procedures or faulty technic at the time of labor. Hence the infant is given the best chance for surviving if the mother receives adequate antepartum care with skilled care during delivery and all injudicious procedures are strictly avoided.

9. PARITY

Of 726 premature infants who died under 2 weeks during 1937, the parity of the mother was known for 714. Of the 440 full term infants who died under 2 weeks during 1937, the parity of the mother was known for 436, a total of 1,150 infants who died under 2 weeks. Of the 545 full term infants who died between 1 and 11 months inclusive during 1937, the parity of the mother was known for 520.

In the cases in which the parity of the mother was known, a primipara was the mother of 44 per cent of the 1,150 infants who died under 2 weeks, of 42 per cent of the 714 premature infants who died under 2 weeks, of 47 per cent of the 436 full term infants who died under 2 weeks and of 32 per cent of the 520 full term infants who died between 1 and 11 months inclusive.

Primiparity occurred with greater frequency in mothers of infants who died under 2 weeks than in mothers of those who died between 1 and 11 months inclusive.

In cases in which the parity was known, a primipara was the mother of (a) 53 per cent of the 135 infants who died from intracranial hemorrhage, (b) 33 per

12. Our criteria for adequate antepartum care in general followed the standards of the Children's Bureau and included supervision over the condition of the mother beginning not later than the fifth month of gestation, periodic blood pressure readings, regular chemical and microscopic examinations of the urine, Wassermann or Kahn tests, the taking of internal pelvic measurements, determination of the position of the fetus and the existence of heart tones, a complete physical examination, attention to diet and elimination, and advice as to exercise, work, recreation and rest.

cent of the forty-six infants who died from pneumonia, (c) 46 per cent of the fifty-two infants who died from asphyxia and (d) 40 per cent of the 239 infants who died without demonstrable pathologic lesions.

A greater percentage of mothers of infants who died of intracranial hemorrhage were primiparas than of mothers of all infants who died under 2 weeks.

The frequency of primiparity was about the same for mothers of infants who died from asphyxia and for those who died without demonstrable pathologic lesions as for mothers of all infants who died under 2 weeks.

(a) *Parity and Complications of Pregnancy, of Labor or of Both.*—Complications of pregnancy, of labor or of both occurred in the mothers of 57.5 per cent of the 205 full term infants who died under 2 weeks who were primiparas, in the mothers of 42.5 per cent of the 231 full term infants who died under 2 weeks who were multiparas, in the mothers of 31 per cent of the 164 full term infants who died between 1 and 11 months inclusive who were primiparas, and in the mothers of 17.7 per cent of 356 full term infants who died between 1 and 11 months inclusive who were multiparas.

These are significant differences and indicate that primiparas definitely have more complications than do multiparas.

(b) *Parity and Complications of Labor.*—Complications of labor occurred in the mothers of 41 per cent of the 205 full term infants who died in the first two weeks who were primiparas, in the mothers of 22.7 per cent of the 231 full term infants who died under 2 weeks who were multiparas, in the mothers of 15.8 per cent of the 164 full term infants who died between 1 and 11 months inclusive who were primiparas and in the mothers of 5.9 per cent of the 356 full term infants who died between 1 and 11 months inclusive who were multiparas.

There is a greater proportion of complications of labor in primiparas than in multiparas.

Of the 220 infants who died under 2 weeks whose mothers did not have complications, (a) for 39.6 per cent the mother was a primipara and (b) for 60.4 per cent the mother was a multipara.

Of the 406 infants who died between 1 and 11 months inclusive whose mothers did not have complications, (a) for 27.8 per cent the mother was a primipara and (b) for 72.2 per cent the mother was a multipara.

The difference between 39.6 per cent and 27.8 per cent is worthy of note and probably not accidental. In the case of primiparas even without complications there is a definitely greater hazard to the life of the infant during the neonatal period.

(c) *Parity and Operative Procedures.*—Of the mothers whose infants died in the first two weeks, operative procedures were employed for (a) 49.5 per cent of the 205 primiparas and (b) 26 per cent of the 231 multiparas.

This again is a noteworthy difference, indicating that operative procedures are a definite factor in the production of deaths in infants under 2 weeks whose mothers are primiparas.

Conclusion.—In the case of primiparas without complications, there is during the first two weeks a definitely greater hazard to the life of the infant than in the case of multiparas without complications; primiparas have more complications, particularly complications of labor, than do multiparas; operative procedures are employed more often for primiparas than for multiparas. This

points out again the need for most skilled obstetric care, particularly in the delivery of primiparas in the presence of complications, in order further to reduce neonatal mortality.

10. SEROLOGIC TESTS FOR SYPHILIS

In the case of the 1,401 premature and 882 full term infants who died neonatally, the serologic test for syphilis was done for 885 and 572 of the mothers, respectively. The serologic test was positive for the mothers of 3.4 per cent of the 1,437 infants who died under 2 weeks, 4.2 per cent of the 885 premature infants who died under 2 weeks, 2.1 per cent of the 572 full term infants who died under 2 weeks and 3.8 per cent of the 705 infants who died between 1 and 11 months inclusive.

The difference in the percentage of positive serologic tests between the mothers of the premature and those of full term infants dying neonatally is only 2.8 times the standard error. There is little difference in the frequency of positive serologic tests between mothers of infants who died under 2 weeks and those of infants who died between 1 and 11 months inclusive. We may assume, therefore, that a positive serologic test is more often associated with the neonatal death of premature infants than of full term infants.

Conclusion.—Even though our figures do not show syphilis to be a great factor in neonatal deaths, every pregnant woman should have a serologic examination for syphilis as early as possible in pregnancy and adequate treatment should be given in all cases of a positive reaction. Some reduction in neonatal mortality, particularly for premature infants, should result.

COMMENT

In listing causes of death in the neonatal period as determined by satisfactory necropsy, the largest group is that in which there was no demonstrable pathologic lesion; then follow those in which there was intracranial hemorrhage, pneumonia and asphyxia, respectively.

A reduction of neonatal mortality to any material degree demands attack on those conditions which our figures seem to show are most important in contributing directly or indirectly to the causes of death.

I. No Demonstrable Pathologic Lesion.—The following factors are of special importance in contributing to the deaths of infants under 2 weeks in whom demonstrable pathologic lesions are not found: (a) prematurity, (b) complications of pregnancy, (c) breech presentation and (d) multiple births.

If the deaths of infants without demonstrable pathologic lesions are to be prevented, an effort must be directed particularly toward the prevention of prematurity, toward providing the best possible care for complications of pregnancy and toward providing the most skilled care during delivery in abnormal presentations.

The true cause of death in the group of infants without any demonstrable pathologic lesion is not yet determined in many cases. Since the majority of these infants are viable, the prematurity itself is probably not entirely responsible.

(a) *Prematurity:* Further studies are necessary to determine exactly what factors produce death in viable premature infants. Possibly some pathologic lesion not yet demonstrated by methods now known may be a factor that contributes to the deaths in this group.

In our series of cases these premature infants were promptly put into an incubator, were supplied with

oxygen and were constantly given the type of special care that is accepted as necessary and satisfactory for prematurely born infants whether they are at home or in the hospital. Consequently we do not believe that lack of the best known care is responsible for the deaths in our series of premature infants without demonstrable pathologic lesions.

Among the complications most often leading to premature births are (1) toxemia, (2) external violence, such as accidents to the mother, (3) placenta praevia and (4) undetermined causes. These factors lead to birth before term, either by producing spontaneous expulsion of the fetus or because the emergency nature of the condition is often an indication for intervention.

In the prevention of prematurity from toxemia and external violence, as well as from other causes, provision of the best possible antepartum care may be of some aid. Some experimental work indicates that the use of vitamin E and progesterin beginning in the early months of pregnancy may aid in the prevention of prematurity in that large group of cases in which the cause of prematurity is undetermined and even perhaps in some instances of premature separation of the placenta. Further studies are needed to determine the exact value of these preparations.

Other things being equal, the infant's chances of survival increase with the period of gestation up to term. To the extent to which prematurity may be prevented or diminished, neonatal mortality will be reduced.

(b) Complications of Pregnancy: To cope with the complications of pregnancy, also, adequate antepartum care seems to be the most hopeful effort.

(c) Breech Presentation: In breech deliveries, a common cause of death is anoxemia (lack of oxygen in the blood), which in many instances occurs without producing any definite pathologic lesions. It is well known that breech deliveries occur more often with premature births than with full term births, which may account in part for the mortality due to breech deliveries of infants without any demonstrable pathologic lesion. The provision of the best possible obstetric care during delivery in cases of breech presentation may result in reduced mortality from this cause.

(d) Multiple Births: Perhaps the use of progesterin, wheat germ oil or normal pregnancy serum in cases of multiple pregnancy may serve to prolong the pregnancy and thus improve the chances of survival of the infants. Our figures do not show that there is anything inherent in multiple pregnancies that may lead to death of the infants other than the fact that these pregnancies often terminate prematurely.

II. *Intracranial Hemorrhage*.—Our figures appear to show that the following factors are of special importance in contributing to the deaths of infants under 2 weeks from intracranial hemorrhage; (a) operative procedures, (b) breech presentation, (c) complications of labor, accompanied by operative procedures, and (d) primiparity.

If the deaths of infants from intracranial hemorrhage are to be prevented, effort must be directed particularly toward providing the most skilled type of obstetric care during labor and delivery, since the factors which are most important in contributing to these deaths, that is, operative procedures, breech presentation, complications of labor and primiparity, are directly connected with the delivery of the infant. Our analysis has revealed that even with the best type of antepartum care

the complications of labor with unskilled operative procedures or the use of unindicated operative procedures may diminish or nullify the value of efforts exerted in behalf of the mother and infant throughout pregnancy.

In specific instances, preventable factors, such as the questionable use of high forceps, depressed fracture following forceps and the injudicious use of solution of posterior pituitary, were found to be associated with deaths from intracranial hemorrhage.

While skill in the conduct of labor will not prevent all deaths from intracranial hemorrhage, it should aid materially in reducing the number.

III. *Pneumonia*.—Our studies seem to indicate that the following factors are of special importance in contributing to the deaths of infants under 2 weeks from pneumonia: (a) complications of labor and pregnancy and (b) prematurity. Hence better obstetric care, both antepartum and intrapartum, should aid in the reduction of the number of deaths from this cause, since it will help prevent complications of pregnancy and labor, and prematurity.

There are probably other factors responsible for deaths from pneumonia in infants under 2 weeks with which our present study was not concerned. We refer specifically to the care given infants immediately after birth in nurseries for the newborn. The establishment of aseptic nursery technic, the prevention of contact between newborn infants and individuals not concerned with their care, may aid in reducing the number of deaths from pneumonia in infants under 2 weeks. Experimental work now being conducted on air conditioning of nurseries and the use of ultraviolet irradiation to aid in the prevention of air-borne infections may bring to light other means of reducing deaths from pneumonia.

IV. *Asphyxia*.—The figures appear to show that the following factors are of special importance in contributing to deaths of infants under 2 weeks from asphyxia: (a) breech presentation, (b) the use of analgesics and (c) operative procedures because of fetal or maternal disproportion.

If the deaths of infants from asphyxia are to be prevented, effort must be directed particularly toward improvement in care given at the time of delivery. Death from asphyxia seems to occur, in the complicated cases, especially with breech deliveries; such cases deserve the most skilled obstetric care.

Avoidance of unnecessary use of analgesics should also be beneficial.

It is interesting to note that 20 per cent of the deaths from asphyxia were in infants delivered by cesarean section. More skillful technic in cesarean operations and the avoidance of them when they are not indicated would reduce the mortality from this cause.

SUMMARY

A large number of factors contributing to deaths of infants under 2 weeks, and particularly those under 1 day of age, may be controlled by the knowledge now available. Improvement in obstetric care, both antepartum and postpartum, better hospital nursery care, the avoidance of dangerous procedures and injudicious use of drugs, which figures show to be definitely hazardous, the use of measures to prolong pregnancy to term, such as progesterin and vitamin E, and the employment of proper methods of resuscitation, should bring a definite reduction in neonatal mortality.

THE SIGNIFICANCE OF THE POSITIVE
KLINE EXCLUSION TEST

UNCONFIRMED BY THE KOLMER OR KAHN TEST

RUTH M. MYERS, M.S.

AND

C. A. PERRY, D.Sc.

BALTIMORE

In 1926 Kline and Young¹ published their first report of a microscopic slide precipitation test for the detection of syphilis. In subsequent reports,² modifications were given which were directed mostly toward the preparation of a more sensitive antigen and more stable antigen emulsion. At present the Kline test is used in two forms: one, with "very sensitive" antigen emulsion, designated as the Kline exclusion test; the other, with a "sensitive" antigen emulsion, designated as the Kline diagnostic test. These tests are easily and rapidly performed, are comparatively inexpensive and require but little equipment.

The Bureau of Bacteriology of the Maryland State Department of Health became interested in the Kline exclusion test while seeking a simple yet reliable screen test, by which to exclude as negative many of the routine specimens submitted for the serodiagnosis of syphilis. Reports in the literature indicated that the Kline exclusion test was highly sensitive but also somewhat nonspecific.³ Most of these reports were based on large series of tests on routine specimens. In the majority, analyses were made on the basis of agreement or disagreement with other tests such as the Kahn or the Kolmer-Wassermann. In some, accurate clinical information was available. In one, evaluation was attempted by sending questionnaires to the individual physicians.

In the Maryland laboratories a series of tests was carried out in triplicate on approximately 500 specimens in a preliminary attempt at evaluation of the Kline exclusion test. In this series the primary concern was the determination of the incidence of Kahn or Kolmer reactions, in the absence of Kline exclusion reactions. This incidence was found to be very slight. Of 272 specimens with negative Kline exclusion reactions, one was unsatisfactory for examination by either the Kolmer or the Kahn test and two gave doubtful Kolmer reactions. One of these doubtful Kolmer specimens came from a treated patient, the other had been submitted for diagnosis. Neither case was checked by a second specimen. None of the remaining 269 Kline exclusion negative specimens reacted in any degree to the Kolmer or to the Kahn test. Since no positive Kolmer or Kahn reaction was obtained when the Kline exclusion test was negative, it seemed that the Kline exclusion was a satisfactory screen test and the routine use of it for this purpose was adopted. It may be added

that every one of 200 more specimens tested at various intervals has also been found to give negative Kline exclusion, Kolmer and Kahn reactions. In another series in which the Hinton and Kline exclusion tests were performed in parallel, none of 401 specimens which were Kline exclusion negative were Hinton positive or doubtful.

From the beginning of our experience with the Kline exclusion test it was noticed that a number of positive Kline exclusion reactions were accompanied by negative Kolmer and Kahn reactions. Since reports in the literature have indicated that many specimens which are positive to the Kline exclusion test and negative to other tests are indicative of syphilis, and since the recent evaluation studies of the United States Public Health Service⁴ have indicated a high degree of specificity for this test, such reactions were first reported to physicians as doubtful. It was hoped, thereby, that certain cases would receive further clinical and laboratory study before being dismissed as nonsyphilitic and that certain syphilitic infections would not be missed.

Check specimens were submitted from a number of these cases. In many instances the reaction was persistently positive; in just as many others the reaction was decidedly diminished or frankly negative. In a few the Kolmer or Kahn test was found to give a reaction as well as the Kline exclusion. Because these check results seemed so varied, it was decided to disregard entirely any positive or doubtful Kline exclusion reactions accompanied by negative Kolmer and Kahn reactions until a more careful consideration of the problem could be undertaken. Accordingly, specimens giving such reactions were reported as negative.

In an effort to determine whether or not these positive Kline exclusion reactions accompanied by negative Kolmer and Kahn reactions were really significant, questionnaires were prepared and sent to each physician who had submitted such a specimen. Of 15,033 specimens submitted for diagnosis over a period of about seven months, there were 540, or 3.6 per cent, which were positive to the Kline exclusion test and negative to both the Kolmer and Kahn tests. These 540 specimens were divided as to the report given the physician. In 275 of them, representing 200 cases, the report was given as "doubtful serologic test." In the remaining 265, representing 253 cases, the report was given as negative. Of the 200 cases given doubtful reports, seventy-two, or 36 per cent, were checked by repeat specimens. Among the 253 cases given negative reports only twenty-two, or 8.7 per cent, were checked. Thus, when doubtful reports were sent out, physicians submitted four times as many check specimens as when negative reports were sent out. A few additional check specimens were received along with replies to questionnaires. Response to the questionnaires likewise differed in these two groups. In the 200 "doubtful" cases, replies were received from 72 per cent, whereas, in the 253 "negative" cases, replies were received from only 31.6 per cent. There was no evidence at any time to indicate that any physician interpreted "doubtful" as "positive."

The results on the repeat specimens in 157 checked cases of both groups were as shown in table 1.

From the Bureau of Bacteriology, Maryland State Department of Health.

1. Kline, B. S., and Young, A. M.: A Microscopic Slide Precipitation Test for Syphilis, *J. A. M. A.* 86: 928 (March 27) 1926.

2. Kline, B. S., and Young, A. M.: A Microscopic Slide Precipitation Test for Syphilis, *J. Lab. & Clin. Med.* 12: 477 (Feb.) 1927; Kline, B. S.: An Antigen for Use in Serum Tests for Syphilis, *ibid.* 13: 588 (March) 1928; Microscopic Slide Precipitation Tests for the Diagnosis and Exclusion of Syphilis, *ibid.* 16: 186 (Oct.) 1930; Microscopic Slide Precipitation Tests for the Diagnosis and Exclusion of Syphilis, *Am. Soc. Clin. Lab. Techn.* 1: 4 (Nov.) 1934.

3. Gould, S. E.: A Comparison of the Standard Kahn and the Kline Tests Based on the Examination of 9,173 Blood Serums and 1,465 Spinal Fluids, *Am. J. Syph., Gonorr. & Ven. Dis.* 21: 72 (Jan.) 1937. Gray, J. D. Allan: A Comparison of the Wassermann, Kline and Meinicke Tests for Sera, *Edinburgh M. J.* 40: 305 (June) 1933. Miller, Thomas H.: The Kline Slide Precipitation Test for Syphilis, *Am. J. Syph., Gonorr. & Ven. Dis.* 13: 583 (Oct.) 1929. Osmond, T. E., and Hughes, K. E.: Value of the Kline Test for Syphilis, *Lancet* 1: 130 (Jan. 16) 1932. Proske, H. O., and Meriwether, F. V.: The Results of a Comparative Study of the Kahn and the Kline Tests for Syphilis, *Ven. Dis. Inform.* 13: 59 (Feb.) 1932. Stewart, Henry V.: Notes on the Kline Precipitation Test for Syphilis, *Am. J. Syph., Gonorr. & Ven. Dis.* 15: 234 (April) 1931.

4. Cumming, H. S.; Hazen, H. H.; Sanford, A. H.; Sencar, F. E.; Simpson, W. M., and Vonderlehr, R. A.: The Evaluation of Serodiagnostic Tests for Syphilis in the United States, *Ven. Dis. Inform.* 16: 189 (June) 1935. Parran, Thomas; Hazen, H. H.; Sanford, A. H.; Sencar, F. E.; Simpson, W. M., and Vonderlehr, R. A.: The Efficiency of State and Local Laboratories in the Performance of Serodiagnostic Tests for Syphilis, *ibid.* 18: 4 (Jan.) 1937. Parran, Thomas; Hazen, H. H.; Mahoney, J. F.; Sanford, A. H.; Sencar, F. E.; Simpson, W. M., and Vonderlehr, R. A.: A Comparative Study of Serodiagnostic Tests for Syphilis as Performed by Thirty-Nine State Laboratories, *ibid.* 18: 273 (Aug.) 1937.

It appears that in nine of the 157 cases checked, or 5.7 per cent, the original Kline exclusion positive result was probably significant, since in later specimens this result was supported by a positive Kolmer or Kahn test and since the specificity of these two tests in our laboratory is very high. Two of these cases were indicated as primary syphilis, two as tertiary. Another primary case not included in this summary because check specimens were not sent to us later became Wassermann and Kahn positive at the Walter Reed Hospital in Washington. It would seem also that in fifteen additional cases, or 9.6 per cent, the original Kline exclusion positive test may have been significant, since in second specimens the Kahn or the Kolmer test was doubtful. In this group syphilis was indicated by the physicians in six cases.

The diagnoses given by the physicians for 234 cases in which the original specimens gave positive Kline exclusion results with negative Kolmer and Kahn results are given in table 2.

Thus in twenty-six, or 11.1 per cent, of the 234 cases syphilis was definitely indicated and in sixteen, or 6.8 per cent, the possibility was admitted.

To the laboratory worker it seems that the 5.7 per cent and 9.6 per cent of original Kline exclusion positive reactions later supported by positive or doubtful Kolmer or Kahn reactions and the 11.1 per cent definite and 6.8 per cent possible syphilis as determined by physical diagnosis are certainly significant. It seems also that the physician may be interested in having the information, but with the warning that diagnostic tests are negative and only a supersensitive test positive,

TABLE 1.—Results of Check Specimens

Result of Check Specimens	Group 1 Reported Doubtful	Group 2 Reported Negative	Total
Kline doubtful or negative, Kolmer and Kahn negative	44	26	70
Kline positive, Kolmer and Kahn negative	41	22	63
Kline positive, Kolmer or Kahn doubtful	12	3	15
Kline positive, Kolmer or Kahn positive	8	1	9
Total cases checked	105	52	157

TABLE 2.—Diagnoses in Cases in Which Kline Exclusion Tests Were Positive and Kolmer and Kahn Results Negative

Syphilis	26
Exposure to syphilis	16
Tuberculosis	8
Pregnancy	2
Encephalitis	2
Carcinoma	1
Arthritis	1
Rheumatic heart	1
Gonorrhea previously	1
Normal or unknown	177

and with the understanding that a very careful clinical examination and check-up is indicated as well as subsequent serologic tests. This matter has been discussed with physicians who favor such a policy, but many others feel that only harm could result from it. Because we believe that a public health laboratory should be conservative, we are continuing to disregard the unconfirmed positive Kline exclusion result in reporting to the physicians until they themselves express the desire for a report indicating supersensitive results.

SUMMARY AND CONCLUSIONS

1. It was shown that in definite instances the positive Kline exclusion test unconfirmed by the Kolmer or the Kahn test is significant of syphilitic infection.

2. It was shown that physicians tend to accept without question the negative serologic report, whereas a

doubtful report elicits further clinical consideration and serologic check-up.

3. No evidence was found to indicate that doubtful reports were interpreted as positive.

4. Therefore a report giving some indication of the reaction of the very sensitive Kline exclusion test would seem to be an advantage to the patient and an aid to the physician.

2411 North Charles Street.

Clinical Notes, Suggestions and New Instruments

PREVENTION OF GONORRHEAL OPTHALMIA IN THE NEWBORN

A. J. SKEEL, M.D., CLEVELAND
Director of Obstetrics, St. Luke's Hospital

In 1935 Lehrfeld¹ reported the results of a study of ophthalmia neonatorum in Philadelphia. He concluded that the incidence of this condition has not materially diminished in fifteen years and quoted Mayou as authority for the statement that in London there was only slight improvement in a similar period. In 27,873 newborn infants in six Philadelphia hospitals he found 632 cases of ophthalmia, in 28 per cent of which the condition was gonorrheal, an incidence of one case of gonorrheal ophthalmia to every 158 births.

In Cleveland in 1933 at four hospitals having 4,354 deliveries, gonorrheal ophthalmia developed in eighteen cases. In the same hospitals in 1935, with 4,637 births, there were thirteen cases. This represents a total of 8,991 births with thirty-one cases of gonorrheal ophthalmia, an incidence of one in 290.

In the present communication I present the experience at St. Luke's Hospital, the technic which my associates and I have developed and the results of this technic in over 10,000 successive deliveries. St. Luke's is a private hospital, maintaining about 15 per cent of free work for training of the house staff. The remainder of the deliveries are divided about equally between a group of half a dozen specialists and seventy-five general practitioners. Most of the nonpaying patients come through the antepartum clinic, and those with gonorrheal infection are rigorously excluded. The infants are therefore not exposed as freely as in some hospitals to the risks of gonorrheal infection.

Our present technic for care of the eyes of the newborn has been in use for about ten years. It was arrived at after extensive trial of various modifications of and departures from the original Credé method. I will mention some of these briefly and state the reasons for dissatisfaction with our earlier methods.

The original method of Credé, relying as it did on 1 drop of 2 per cent solution of silver nitrate, dispensed with a glass rod to insure uniformity in the size of the drop, produced silver conjunctivitis in many cases without eliminating all gonorrheal ophthalmia. Although we exercised the utmost care, infection occurred in about 0.5 per cent of our cases.

When we followed the application of silver nitrate with a saline irrigation after two minutes, we found more cases of gonorrheal infection, although the silver conjunctivitis diminished. We tried 2 or 3 drops of 1 per cent silver nitrate with and without subsequent saline irrigation. In the one instance the cases of irritation increased and in the other incidence of gonorrheal ophthalmia was larger. Flushing the eyes with several drops of 0.5 per cent silver solution with and without subsequent saline irrigation gave equally unsatisfactory results.

Other variations were tried, and we finally arrived at our present technic by a process of trial and error. We have used this procedure in over 10,000 successive cases in which gonorrheal ophthalmia was totally eliminated. In the last 3,000 deliveries the patient has been given every twelve hours during labor prophylactic vaginal injections of an aqueous solution of merthiolate, two parts of distilled water to one part of merthio-

From St. Luke's Hospital.

1. Lehrfeld, Louis: 'Limitations of Use of Silver Nitrate in Prevention of Ophthalmia Neonatorum,' J. A. M. A. 104: 1468 (April 27) 1935.

late solution. This was done with no thought of gonorrheal infection but may have offered some protection.

Our routine procedure is as follows:

1. At the time of delivery of the head, the eyes are carefully cleansed with dry sterile sponges. No boric acid solution is used.
2. When the cord has been cut, 3 or 4 drops of 0.5 per cent solution of silver nitrate are instilled and the lids are gently manipulated to distribute the solution to every part of the conjunctival sac. After forty-five seconds the sac is freely flushed with a 20 per cent solution of mild silver protein. This irrigation is repeated on three successive days as a routine part of the nursery technic. The substance must be completely dissolved. The solution is prepared twice weekly.

We think that the repeated conjunctival flushing with a bland silver preparation is vital to the success of the method. Our rationale of this technic is as follows:

1. Irrigation with a boric acid solution is not used; this solution is not a gonococcicide, and its use serves merely to introduce the organisms into the conjunctival sac.
2. We believe that the occasional late infection which was observed before the use of repeated irrigations with bland silver solution occurred as the result of the presence of a few organisms of reduced virulence, which are destroyed by the successive treatments.

We realize our relative freedom from cases of virulent gonorrheal vaginitis. The technic is presented in the hope that more extensive trial may be made of the procedure and its value determined.

11311 Shaker Boulevard.

Special Article

THE PHARMACOLOGY AND THERAPEUTICS OF VITAMIN A

S. W. CLAUSEN, M.D.

ROCHESTER, N. Y.

This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—ED.

Treatment with vitamin A is indicated in disorders clearly due to deficiency of vitamin A in the diet. These disorders include nutritional night blindness, xerophthalmia, keratomalacia and a definite kind of follicular keratosis of the skin. The use of vitamin A in the prophylaxis of these disorders is also well established. It is appropriate to discuss these well defined uses of vitamin A before undertaking an analysis of the other uses proposed for vitamin A. Tests for loss of adaptation to dim light have been introduced recently as a measure of deficiency of vitamin A. These tests are considered in the section of this review dealing with night blindness.

Treatment with vitamin A has been suggested in conditions obviously not due to deficiency, for example, in hyperthyroidism, because experiments with animals demonstrate an antagonism between vitamin A and thyroxine. Vitamin A has also been used for the local treatment of injuries of the skin because of a supposed stimulating effect on epithelial growth. Vitamin A has been used in conditions which

might be associated with deficiency of a moderate degree, but almost without exception the observers provided no evidence of the existence of the moderate deficiency. These conditions include urinary lithiasis and degenerative changes in the nervous system. As a rule, the evidence of benefit from the use of vitamin A in these conditions has been conflicting. The experiments with animals have not given uniformly positive results because the conditions of the experiments have been too varied. Although it cannot be concluded that deficiency of vitamin A is the sole cause of nervous degeneration or of lithiasis, it may be admitted that these abnormal conditions may be due to faulty diet, and there is hope that the exact dietary causes will be disclosed eventually.

Most observers find that severe deficiency of vitamin A is accompanied by decrease of resistance to infection. Vitamin A has been rather widely advocated to increase resistance to infection. The clinical evidence often fails to meet the requirements of statistics. Few of the observers have attempted to demonstrate the presence of vitamin A deficiency in their subjects.

Injury to animals results from large doses of vitamin A. These doses are far larger than any proposed for human beings. Ordinary doses of cod liver oil may be harmful to animals consuming unusual diets, especially herbivora. The injurious effects, at least in herbivora, are not due to the presence of vitamin A in the oil. Clinical experience would indicate that ordinary doses of fish liver oils are not injurious to human beings.

VITAMIN A AND THE EYE

Night Blindness.—Loss of visual acuity in dim light is known as night blindness. It occurs in various diseases of the eye such as toxic amblyopia, retinitis pigmentosa and detachment of the retina, but a form was known in the time of ancient Egypt which could be cured by a diet of liver. In more recent times, night blindness has been reported in prisoners, in Negro slaves in Brazil, in sailors on long voyages, in soldiers during the World War, and in Orthodox Russians during the Lenten fasts. Blegvad¹ found it in thirty-seven Danish cases of xerophthalmia. Ishihara² cured it with cod liver oil. Bloch³ suggested that it is due to deficiency of vitamin A, which, in 1921, on purely clinical grounds, he distinguished from the antirachitic factor. Parinaud⁴ suggested that visual adaptation to dim light is a function of visual purple in the retina. Because of these observations, Fridericia and Holm⁵ and Holm⁶ studied the formation of visual purple in the retinas of rats which received diets deficient in vitamin A. They found that the rate of regeneration of visual purple after its bleaching by a bright light in the living animal was less in the rats receiving the deficient diet than in the controls. The rats with deficient diet were also night blind. Tansley⁷ confirmed

1. Blegvad, O.: Xerophthalmia, Keratomalacia and Xerosis Conjunctivae, *Am. J. Ophth.* 7: 89 (Feb.) 1924.

2. Ishihara, S.: Zur Aetiologie der idiopathischen Hemeralopie bzw. Xerosis conjunctivae, *Klin. Monatsbl. f. Augenh.* 51: 596 (Jan.-June) 1913.

3. Bloch, C. E.: Clinical Investigation of Xerophthalmia and Dystrophy in Infants and Young Children (Xerophthalmia et Dystrophia alipogenetica), *J. Hyg.* 19: 283 (Jan.) 1921.

4. Parinaud, M.: L'héméralopie et les fonctions du pourpre visuel, *Compt. rend. Acad. d. sc.* 92: 286 (July) 1881.

5. Fridericia, L. S., and Holm, E.: Experimental Contribution to the Study of the Relation Between Night Blindness and Malnutrition: Influence of Deficiency of Fat Soluble A-Vitamin in the Diet on the Visual Purple in the Eyes of Rats, *Am. J. Physiol.* 72: 63 (June) 1925.

6. Holm, E.: Demonstration of Hemeralopia in Rats Nourished on Food Devoid of Fat-Soluble A-Vitamin, *Am. J. Physiol.* 72: 79 (June) 1925.

7. Tansley, Katharine: The Regeneration of Visual Purple: Its Relation to Dark Adaptation and Night Blindness, *J. Physiol.* 71: 442 (April) 1931.

these observations. Yudkin, Kriss and Smith⁸ showed that the fat extracted from the retina is one of the richest sources of vitamin A and suggested that visual purple may bear a direct structural relationship to vitamin A. Wald⁹ has shown that, in mammals, birds, amphibians and certain marine fish, vitamin A unites in the retina with a protein to form visual purple. This process takes place continuously and depends on a sufficient supply of vitamin A. Under the influence of light, visual purple is changed to visual yellow; a portion of the visual yellow reverts, in the dark, to visual purple; another portion undergoes decomposition into vitamin A and a protein. It is apparent that vitamin A takes part in a cycle of changes in the retina and that the rate of formation of visual purple after exposure of the retina to bright light depends on the available supply of vitamin A. The chemical processes involved in vision are the subjects of active study at the present time (Mirsky,¹⁰ Hecht,¹¹ Dartnall and Goodeve,¹² the von Jancsó¹³).

The facts just presented, together with the observation that night blindness is an early symptom of deficiency of vitamin A, form the basis of recent tests for visual adaptation in dim light as methods for the diagnosis of vitamin A deficiency. Hart, Mead and Guilbert¹⁴ observed spontaneous night blindness in cattle during a severe drought and proved that the visual defect was due to the very low carotene content of the food. By means of accurate clinical observations of the symptom night blindness and by analyses of the organs and of the rations for vitamin A and for carotene, their subsequent studies¹⁵ have shown that night blindness occurs only when the stores of vitamin A in the liver are practically exhausted; the daily requirement of carotene for cattle, sheep and swine depends only on the weight of the animals and does not depend on the rate of growth, the dose being from 25 to 39 micrograms per kilogram of body weight. This amount agrees closely with that found for the rat (25 micrograms per kilogram daily) by Baumann, Riising and Steenbock.¹⁶ When vitamin A is given as cod liver oil, the requirements are the same for the different species of animal and depend only on the weight. The authors give provisional figures of from 5.6 to 8.4 micrograms per kilogram of body weight for the daily requirement of vitamin A.

Studies of dark adaptation in children have been carried out by Jeans and his colleagues,¹⁷ who used at first the Birch-Hirschfeld photometer and later an improved photometer. In their method the subject is placed in the dark for ten minutes and then exposed to bright light for three minutes. During the following ten minute period of recovery, tests for visual acuity are made. The subject must be able to cooperate by stating accurately what he sees. Normal standards were obtained by testing persons known to have been eating diets rich in vitamin A. Jeans reported in 1933 that 25 per cent of rural children and 53 per cent of city children showed poor visual adaptation; later, in a smaller series, about the same incidence was found. The administration of cod liver oil or of carotene equivalent to from 5,000 to 6,000 international units of vitamin A daily brought about recovery in from four to six weeks. The minimum daily requirements for vitamin A in two boys 11 years of age were found to be about 3,000 units. Snelling at first¹⁸ agreed with the results of Jeans but later¹⁹ encountered technical difficulties in using the Birch-Hirschfeld apparatus and stated his belief that experience with the test by the subject might account for some of the "improvement" in readings following the use of cod liver oil. Palmer and Blumberg²⁰ have presented convincing evidence that improvement in visual acuity with repetition of the test may be due to practice and that variations among normal children are so great that the results of single tests are unreliable. Park²¹ has used the method with adults but gives impressions rather than statistics. Jeghers²² calls attention to the prevalence and the importance of night blindness in drivers of automobiles. He has also reviewed^{22b} the literature on night blindness as a criterion of vitamin A deficiency and has added^{22c} observations on adults, using the method of Jeans.

Edmund and Clemmesen²³ have used as a criterion for loss of visual acuity in dim light the power of distinguishing simple geometric forms. Friderichsen and Edmund²⁴ use for their criterion the faintest illumination to which a child reacts when his eye is fully adapted to darkness. The investigator observes reflex movements—squeezing together of the lids, oculomotor

8. Yudkin, A. M.; Kriss, Max, and Smith, A. H.: Vitamin A Potency of Retinal Tissue, *Am. J. Physiol.* **97**: 611 (July) 1931.

9. Wald, George: Vitamin A in Eye Tissues, *J. Gen. Physiol.* **18**: 905 (July) 1935; Carotenoids and the Visual Cycle, *ibid.* **19**: 351 (Nov.) 1935; The Chemistry of the Visual Purple System, Cold Spring Harbor, Biol. Lab. Symposia on Quant. Biol. **3**: 251, 1935; The Visual Purple System in Marine Fishes, *Nature* **126**: 913 (Dec. 7) 1935; Pigments of the Retina: I. The Bull Frog, *J. Gen. Physiol.* **19**: 781 (May 20) 1936; Pigments of the Retina: II. Sea Robin, Sea Bass, and Sculp, *ibid.* **20**: 45 (Sept.) 1936; Bleaching of Visual Purple in Solution, *Nature* **139**: 587 (April 3) 1937; Visual Purple System in Fresh Water Fishes, *ibid.* **139**: 1017 (June 12) 1937.

10. Mirsky, A. E.: The Visual Cycle and Protein Denaturation, *Proc. Nat. Acad. Sci.* **22**: 147 (Feb.) 1936.

11. Hecht, Selig: Rods, Cones and the Chemical Basis of Vision, *Physiol. Rev.* **17**: 239 (April) 1937.

12. Dartnall, H. J. A., and Goodeve, C. F.: Scotopic Luminosity Curve and the Absorption Spectrum of Visual Purple, *Nature* **139**: 409 (March 6) 1937.

13. von Jancsó, N., and von Jancsó, H.: Fluoreszenzmikroskopische Beobachtung der reversiblen Vitamin-A-Bildung in der Netzhaut während des Schaktes, *Biochem. Ztschr.* **287**: 289 (Oct.) 1936.

14. Hart, G. H.; Mead, S. W., and Guilbert, H. R.: Vitamin A Deficiency in Cattle Under Natural Conditions, *Proc. Soc. Exper. Biol. & Med.* **30**: 1230 (June) 1933.

15. Guilbert, H. R., and Hart, G. H.: Minimum Vitamin A Requirements with Particular Reference to Cattle, *J. Nutrition* **10**: 409 (Oct.) 1935. Guilbert, H. R.; Miller, R. F., and Hughes, E. H.: The Minimum Vitamin A and Carotene Requirement of Cattle, Sheep and Swine, *ibid.* **13**: 543 (May) 1937.

16. Baumann, C. A.; Riising, B. M., and Steenbock, Harry: Fat Soluble Vitamins: XL. The Growth Method of Determining Vitamin A, *Ztschr. f. Vitaminforsch.* **3**: 81 (April) 1934.

17. Jeans, P. C.: Vitamin Deficiency in Childhood, *Minnesota Med.* **16**: 688 (Nov.) 1933. Jeans, P. C., and Zentmire, Zelma: Prevalence of Vitamin A Deficiency Among Children in Iowa, *Am. J. Dis. Child. (Society Transactions)* **48**: 928 (Oct.) 1934; A Clinical Method for Determining Moderate Degrees of Vitamin A Deficiency, *J. A. M. A.* **102**: 892 (March 24) 1934; The Prevalence of Vitamin A Deficiency Among Iowa Children, *ibid.* **106**: 996 (March 21) 1936. Jeans, P. C.; Blanchard, Evelyn, and Zentmire, Zelma: Dark Adaptation and Vitamin A, *ibid.* **108**: 451 (Feb. 6) 1937.

18. Snelling, C. E.: Vitamin A Deficiency in Children, *Am. J. Dis. Child. (Society Transactions)* **51**: 484 (Feb.) 1936.

19. Snelling, C. E.: A Study of the Birch-Hirschfeld Photometric Test for Vitamin A Deficiency, *J. Pediatr.* **9**: 655 (Nov.) 1936.

20. Palmer, C. E., and Blumberg, H.: The Use of a Dark Adaptation Technic (Biophotometer) in the Measurement of Vitamin A Deficiency in Children, *Pub. Health Rep.* **52**: 1403 (Oct. 8) 1937.

21. Park, I. O.: Preliminary Observations on Vitamin A Deficiency as Shown by Studies with the Visual Photometer, *J. Oklahoma M. A.* **28**: 357 (Oct.) 1935; Further Observations on Vitamin A Deficiency as Shown by Studies with the Visual Photometer and Clinically, *ibid.* **29**: 129 (April) 1936; Significance of Vitamin A Deficiency, editorial, *Am. J. Digest. Dis. & Nutrition* **3**: 193 (May) 1936.

22. (a) Jeghers, Harold: Night Blindness Due to Vitamin A Deficiency: Consideration of Its Importance in Traffic Problems, *New England J. Med.* **216**: 51 (Jan. 14) 1937; (b) Night Blindness as a Criterion of Vitamin A Deficiency: Review of the Literature with Preliminary Observations of the Degree and Prevalence of Vitamin A Deficiency Among Adults in Both Health and Disease, *Ann. Int. Med.* **10**: 1304 (March) 1937; (c) The Degree and Prevalence of Vitamin A Deficiency in Adults, with a Note on Its Experimental Production in Human Beings, *J. A. M. A.* **109**: 756 (Sept. 4) 1937.

23. Edmund, C., and Clemmesen, S.: On Deficiency of A Vitamin and Visual Dysadaptation, Copenhagen, Levin and Munksgaard, 1936; London, Humphrey Milford, Oxford University Press, 1936, pp. 1-77.

24. Friderichsen, C., and Edmund, C.: Studies on Hypovitaminosis A: II. A New Method for Testing the Resorption of Vitamin A from Medicaments, *Am. J. Dis. Child.* **53**: 89 (Jan., part 1) 1937; Studies on Hypovitaminosis A: III. Clinical Experiments in the Vitamin A Balance in Children After Various Diets, *ibid.* **53**: 1179 (May) 1937.

movements, turning the head toward the light. The authors make the surprising statements that improvement in visual acuity may occur within half an hour after the administration of halibut liver oil and that in some cases in which improvement has not occurred after administration of cod liver oil or halibut liver oil prompt improvement occurs after the administration of a preparation of spinach. Their method does not determine the rate at which visual purple is regenerated in light or in darkness as does that of Jeans, but it has the advantage that it can be applied to infants.

It is evident that the use of the methods described requires a certain amount of practice. Since they apparently reveal an incidence of night blindness far greater than any one had supposed might exist, confirmation of the conclusions of the various authors is needed. The retina obtains its vitamin A from the blood. It is known that vitamin A may disappear from the blood during starvation and during infections, even though considerable stores may remain in the liver.²⁵ Consequently, further observations are necessary in order to establish the value of tests of adaptation in dim light as a criterion of the reserves of vitamin A in the body.

Xerophthalmia and Keratomalacia.—These are symptoms of severe deficiency of vitamin A. Xerophthalmia, or dryness of the conjunctivae, is associated with atrophy of the para-ocular glands, with metaplasia of the epithelium of the glands and conjunctivae, and with loss of sensation in the conjunctiva, especially affecting the cornea. At first the dryness may be overlooked and may be associated with photophobia.^{22c} Triangular white spots—Bitot's spots—appear in the palpebral fissure; irregular wrinkled patches of xerosis are found over the bulbar conjunctivae and later over the cornea. A characteristic light brown pigmentation develops in the conjunctiva.²⁶ The superficial layers of the cornea degenerate. In the final stage, corneal softening, or keratomalacia, develops; severe impairment of vision results and permanent blindness is likely to follow.²⁷

Xerophthalmia is rare in the United States. A few clinical and pathologic studies have been published.²⁸ The disease may appear in epidemic form during periods of famine or in persons receiving a deficient diet for some other reason. It has been observed in prisoners, slaves and workmen.²⁹ A very remarkable epidemic occurred during the World War in Denmark

as a result of extensive exportation of dairy products and of the use of cheaper fats lacking in vitamin A for food.³⁰

The Treatment of Night Blindness Due to Vitamin A Deficiency.—Patients with normal power to absorb carotene and vitamin A may be treated by diet alone; the diet should include liberal amounts of milk, butter and green vegetables; cod liver oil or some other preparation of vitamin A or of carotene also should be administered. An improvement in dark adaptation may be demonstrable in a few minutes or hours after the ingestion of highly potent fish liver oils.³⁴ Jeghers^{22c} reports that visual acuity was restored within two or three weeks in adults with night blindness who received a daily dose of carotene equivalent to 10,000 units of vitamin A. In certain rare cases, gastro-intestinal disease may result in faulty absorption, as in the patient of Wilbur and Eusterman,³¹ whose diet had been adequate but who recovered from night blindness only after repair of a gastro-colic fistula.

SKIN

Dryness and scaliness of the skin, with a tendency to infection, were described in cases of xerophthalmia by Pillat.³² Characteristic lesions of the human skin due to vitamin A deficiency were first recognized as such by Frazer and Ch'uan-K'uei³³ in Chinese soldiers. Later reports confirm their results and add a few facts.³⁴ The lesions usually occur in sexually mature persons between 16 and 30 years of age and not in infants. They are much more frequent in men than in women. Ninety per cent of the patients have obvious ocular manifestations of vitamin A deficiency. The lesions appear first on the anterolateral surface of the thighs and posterolateral portion of the upper forearms and later spread to adjacent areas of the skin. They consist of pigmented papules, up to 5 mm. in diameter, at the site of the hair follicles, from which project keratotic plugs. In about one third of the cases, pustules develop. The skin is not oily and does not sweat. Microscopic section shows atrophy of the pilosebaceous glands with metaplasia and hyperkeratinization of the epithelium. Secondary infection may occur but hemorrhage does not. The treatment consists of a diet including butter, eggs, liver and cod liver oil (as much as 30 cc. a day). The first sign of improvement is a return of moisture to the skin. The keratotic papules heal slowly after a few weeks.

GASTRO-INTESTINAL TRACT

The Absorption of Vitamin A and of Carotene.—Drummond, Bell and Palmer³⁵ studied the absorption of vitamin A and carotene in a patient with a fistula of the thoracic duct opening into the pleural cavity.

25. Clausen, S. W.: Limits of the Anti-Infective Value of Provitamin A (Carotene), *J. A. M. A.* **101**: 1384 (Oct. 28) 1933.

26. Mu, J. W.; Frazier, C. N., and Pillat, Arnold: Melanin Pigment of the Skin and Conjunctiva in Avitaminosis A in Man, *Chinese J. Physiol.* **11**: 247 (March 1) 1937.

27. Mori, M.: Ueber den sogenannten Hikan (Xerosis conjunctivae infantum ev. Keratomalacie), *Jahrb. f. Kinderh.* **59**: 175, 1904. Mori, S.: The Changes in the Para-Ocular Glands Which Follow the Administration of Diets Low in Fat-Soluble A, with Notes of the Effect of the Same Diets on the Salivary Glands and the Mucosa of the Larynx and Trachea, *Bull. Johns Hopkins Hosp.* **33**: 357 (Oct.) 1922. Osborne, T. B., and Mendel, L. B.: Ophthalmia as a Symptom of Dietary Deficiency, *Am. J. Physiol.* **69**: 343 (Aug.) 1924. Bloch, C. E.: Blindness and Other Diseases in Children Arising from Deficient Nutrition (Lack of Fat-Soluble A Factor), *Am. J. Dis. Child.* **27**: 139 (Feb.) 1924. Pillat.

28. Little, W. S.: Kerato-malacia (Sphacelus) with a Case, *Philadelphia M. Times* **12**: 490 (April 22) 1882. Weeks, J. E.: Xerosis of the Conjunctiva in Infants and Children, *Arch. Ophthalm.* **15**: 332, 1886. Kollock, C. W.: A Form of Xerosis, *Ophthalm. Rev.* **9**: 249 (Sept.) 1890. Ross, S. G.: Nutritional Keratomalacia in Infants, with a Report of Four Cases, *Am. J. Dis. Child.* **22**: 232 (Sept.) 1921. Wilson, J. R., and DuBois, R. O.: Report of a Fatal Case of Keratomalacia in an Infant with Postmortem Examination, *ibid.* **26**: 431 (Nov.) 1923. Blackfan, K. D., and Wolbach, S. B.: Vitamin A Deficiency in Infants, *J. Pediatr.* **3**: 679 (Nov.) 1933. Thorson, J. A.: Nutritional Xerophthalmia, *J. A. M. A.* **102**: 1438 (Nov. 10) 1934.

29. Wright, R. E.: Keratomalacia in Southern India, *Brit. J. Ophthalm.* **6**: 164 (April) 1922. Mitchell, P.: Observations on Health in Relation to Diet in His Majesty's Central Prison, Uganda: I. Prison Diets and Morbidity, *East African M. J.* **10**: 38 (May) 1933. Loewenthal, L. J. A.: The Manifestations of Vitamin A Deficiency in Man, *Ann. Trop. Med.* **29**: 407 (Dec.) 1935.

30. Widmark, E.: Vitamin A Deficiency in Denmark and Its Results, *Lancet* **1**: 1206 (June 14) 1924. Bloch, C. E.: Effects of Deficiency in Vitamins in Infancy, *Am. J. Dis. Child.* **42**: 263 (Aug.) 1931. Blegvad.

31. Wilbur, D. L., and Eusterman, G. B.: Nutritional Night Blindness: Report of a Case, *J. A. M. A.* **102**: 364 (Feb. 3) 1934.

32. Pillat, Arnold: Does Keratomalacia Exist in Adults? *Arch. Ophthalm.* **2**: 256 (Sept.), 399 (Oct.) 1929.

33. Frazier, C. N., and Ch'uan-K'uei, Hu: Cutaneous Lesions Associated with a Deficiency of Vitamin A in Man, *Arch. Int. Med.* **48**: 507 (Sept.) 1931.

34. Loewenthal, L. J. A.: A New Cutaneous Manifestation in the Syndrome of Vitamin A Deficiency, *Arch. Dermat. & Syph.* **28**: 700 (Nov.) 1933. Scheer, Max, and Keil, Harry: Follicular Lesions in Vitamin A and C Deficiencies, *ibid.* **30**: 177 (Aug.) 1934. Sweet, L. H., and K'ang, H. J.: Clinical and Anatomic Study of Avitaminosis A and Among the Chinese, *Am. J. Dis. Child.* **50**: 699 (Sept.) 1935. Reis, F.: A Contribution to Cutaneous Manifestations of Vitamin A Deficiency, *Chinese M. J.* **50**: 945 (July) 1936. Frazier, C. N., and Ch'uan-K'uei, Hu: Nature and Distribution According to Age of Cutaneous Manifestations of Vitamin A Deficiency: A Study of 207 Cases, *Arch. Dermat. & Syph.* **33**: 825 (May) 1936.

35. Drummond, J. C.; Bell, M. E., and Palmer, F. T.: Observations on the Absorption of Carotene and Vitamin A, *Brit. M. J.* **1**: 1203 (June 15) 1935.

Analysis of the fluid from the chest, made after the administration of vitamin A or of carotene by mouth, showed that very little of the carotene had passed into the chylous fluid, whereas nearly all of the vitamin A could be recovered. The vitamin A of natural oils and fats occurs as an ester; in preparations made by saponification it occurs as a free alcohol. When the vitamin was administered as the free alcohol, it was found in the lymph mainly in the esterified condition. It therefore appears that the mechanism of absorption of vitamin A includes linkage with fatty acids, probably in the intestinal wall. Such linkage is impossible in the case of the hydrocarbon carotene, a fact that may explain its lower coefficient of absorption. There is evidently always some loss of vitamin A or of carotene in the stools; in diets low in vitamin A, a negative balance may be demonstrated.³⁶ Nothing is known about the degree of destruction of vitamin A or of carotene in the gastro-intestinal tract under normal or pathologic conditions. If liquid petrolatum is administered with the vitamin, considerable loss occurs.³⁷ The loss is not so great if the oil is administered separately, and the effect is much greater in the case of carotene than in the case of vitamin A itself.

Exclusion of bile from the alimentary tract interferes with absorption of carotene and possibly of vitamin A. Altschule³⁸ found microscopic evidence of vitamin A deficiency in six of eleven infants dying of congenital atresia of the bile ducts. In rats in which a fistula had been made between the gallbladder and the colon and which had been fed diets free of vitamin A, Greaves and Schmidt³⁹ found that carotene was not absorbed. If glycodeoxycholic acid or deoxycholic acid was administered with the carotene, it was absorbed. Vitamin A, as such, was however absorbed by the rat with the internal bile fistula.

During infections, both carotene and vitamin A are poorly absorbed.⁴⁰

Patients with steatorrhea absorb vitamin A poorly.⁴¹

The faulty absorption of carotene from the gastro-intestinal tract—and in some cases, of vitamin A—under the conditions just discussed explains the occurrence of symptoms of vitamin A deficiency in persons consuming adequate diets, and the occasional failure of therapy with vitamin A or carotene when given by mouth. In certain rare cases, it may be advisable to administer vitamin A or carotene by injection, as in a case observed by Bloch.⁴²

36. Rowntree, J. I.: A Study of the Absorption and Retention of Vitamin A in Young Children, *J. Nutrition* 3: 265 (Nov.) 1930.

37. Rowntree, J. I.: The Effect of the Use of Mineral Oil upon the Absorption of Vitamin A, *J. Nutrition* 3: 345 (Jan.) 1931. Jackson, R. W.: The Effect of Mineral Oil Administration upon the Nutritional Economy of Fat-Soluble Vitamins: I. Studies with the Vitamin A of Butter Fat, *ibid.* 4: 171 (July) 1931. Jackson, R. W.: The Effect of Mineral Oil Administration upon the Nutritional Economy of Fat-Soluble Vitamins: II. Studies with the Vitamin A Factor of Yellow Corn, *ibid.* 7: 607 (June) 1934. Dutcher, R. A.; Harris, P. L.; Hartzler, E. R., and Guerrant, N. B.: Vitamin Studies: XIX. The Assimilation of Carotene and Vitamin A in the Presence of Mineral Oil, *ibid.* 8: 269 (Sept.) 1934.

38. Altschule, M. D.: Vitamin A Deficiency in Spite of Adequate Diet in Congenital Atresia of Bile Ducts and Jaundice, *Arch. Path.* 20: 845 (Dec.) 1935.

39. Greaves, J. D., and Schmidt, C. L. A.: On the Absorption and Utilization of Carotene and Vitamin A in Cholecholecystomized Vitamin A Deficient Rats, *Am. J. Physiol.* 111: 492 (April) 1935.

40. Clausen, S. W.: Limits of the Anti-Infective Value of Provitamin A (Carotene), *J. A. M. A.* 101: 1384 (Oct. 28) 1933. Heymann, Walter: Absorption of Carotene, *Am. J. Dis. Child.* 51: 273 (Feb.) 1936.

41. Chesney, Jack, and McCoord, Augusta B.: Vitamin A of Serum Following Administration of Haliver Oil in Normal Children and in Chronic Steatorrhea, *Proc. Soc. Exper. Biol. & Med.* 31: 887 (April) 1934. Friderichsen, I. C.: Quantitative Investigations on Resorption of Vitamin A in Case of Celiac Disease: Studies on Hypovitaminosis A, *Hospitalstid.* 79: 689 (July 7) 1936; *abstr. J. A. M. A.* 107: 918 (Sept. 12) 1936. Bloch.⁴²

42. Bloch, C. E.: Light and the A-Body, *Am. J. Dis. Child.* 31: 315 (March) 1926.

Vitamin A in the Treatment of Gastro-Intestinal Disorders.—Manville⁴³ stated that the secretion of gastric mucus was decreased in rats fed diets deficient in vitamin A but that the secretion of acid was not impaired. The p_H of the gastric contents fell from normal values of 3.4 to 3.0-2.5 during avitaminosis. Gastric ulcers were found in from 60 to 100 per cent of the rats. The feeding of Fogelson's mucin did not relieve the ordinary symptoms of avitaminosis but tended to cure the ulcers. In a later paper Manville⁴⁴ found that the number of mucus-secreting elements of the intestinal tract decreased, exposing the mucous membrane to injury from solid components of the food and feces. Occult blood in the stools was the earliest evidence of deficiency of vitamin A. Olcott⁴⁵ was unable to find ulceration of the gastro-intestinal tract in avitaminosis A.

Boller⁴⁶ has treated cases of hypo-acidity and of gastric and of duodenal ulcer with vitamin A, stating that increase in gastric acidity resulted and that symptoms and signs of ulcer diminished.

Obviously, the experimental basis for the use of vitamin A in gastro-intestinal disorders is not yet clearly established.

THYROID

In 1926 Abelin⁴⁷ observed that the toxic effects due to feeding thyroid gland to rats could be lessened by diets rich in cod liver oil or in egg yolk. He later published extensive studies⁴⁸ showing the beneficial effects of diets high in protein, fats and bone marrow, provided cod liver oil, egg yolk and dried powdered vegetables also were included in the diets. His purpose was to devise a diet for the treatment of hyperthyroidisms in man; he did not direct his studies to the discovery of any one particularly beneficial constituent. That step was taken by von Euler and Klusmann.⁴⁹ In their experiments, rats were fed diets in which the only source of vitamin A was known amounts of carotene. The loss in weight of the animals due to daily injections of thyroxine could be prevented by the administration of carotene. In the following year Abelin⁵⁰ showed that injections of thyroxine decrease the stores of carotene and vitamin A in the liver of guinea pigs consuming a diet very low in carotene and receiving intraperitoneal injections of colloidal carotene. According to Eufinger and Gottlieb,⁵¹ the metamorphosis of tadpoles treated with thyroxine may be delayed by the administration of human plasma or of vitamin A. Fasold and Peters⁵² repeated the experi-

43. Manville, I. A.: The Production of Gastric Ulcers by Dietary Means, *Am. J. Physiol. (Society Proc.)* 105: 70 (July) 1933.

44. Manville, I. A.: The Interrelationship of Vitamin A and Glucuronic Acid in Mucine Metabolism, *Science* 85: 44 (Jan. 8) 1937.

45. Olcott, H. S.: Vitamin A Deficiency in the Dog, *Proc. Soc. Exper. Biol. & Med.* 30: 767 (March) 1933.

46. Boller, R.: Ueber die Behandlung verschiedener Magenkrankheiten mit Vitamin A (Vogan), *Ztschr. f. klin. Med.* 130: 163, 1936.

47. Abelin, I.; Goldener, E., and Kobori, B.: Ueber die Bedeutung des Fettes für die Stoffwechselwirkung der Schilddrüse, *Biochem. Ztschr.* 174: 232, 1926.

48. Abelin, I.: Ernährung und Schilddrüsenwirkung: I. Mitteilung. Einfluss des Caseins auf den hyperthyreotischen Stoffwechsel, *Biochem. Ztschr.* 228: 165, 1930. Abelin, I.; Knuchel, M., and Specht, W.: Ernährung und Schilddrüsenwirkung: II. Ueber die Bedeutung der Vitamine für den Verlauf der experimentellen Hyperthyreose, *ibid.* p. 189. Abelin, I.: Ernährung und Einfluss bestimmt zusammengesetzter Nahrungsmittel auf den hyperthyreotischen Stoffwechselstörungen, *ibid.*, p. 211.

49. von Euler, H., and Klusmann, E.: Carotin (Vitamin A) und Thyroxin, *Ztschr. f. physiol. Chem.* 213: 21, 1932; Vitamin A, und Follikulin, *Archiv. für Chem., Mineralogie und Geologie*, 1932, 11B, part 2, No. 1, pp. 1-6.

50. Abelin, I.: Ueber die Beziehungen zwischen Vitamin A (Vitamin A) und Thyroxin, *Ztschr. f. physiol. Chem.* 213: 21, 1932.

51. Eufinger, H., and Gottlieb, I.: Ueber die Bedeutung des Thyroxin-effektes im biologischen, *ibid.* 213: 21, 1932 (Sept. 9) 1933.

52. Fasold, H., and Peters, H.: Ueber den Antagonismus zwischen Thyroxin und Vitamin A, *Ztschr. f. d. ges. exper. Med.* 92: 57, 1933.

ments of von Euler and Klusmann and of Abelin, using a concentrate of fish liver oil ("Vogan"⁵³) as the source of vitamin A instead of carotene. The dose was so large (1 cc., or 40,000 units of vitamin A daily) that symptoms of hypervitaminosis were produced. These symptoms could be prevented by administration of thyroxine and could be cured, if paralysis had not developed. These authors demonstrated that thyroxine does not prevent the conversion of carotene to vitamin A in the rat and that the beneficial results in hypervitaminosis are due to the rapid destruction of the vitamin. There is in fact evidence that the conversion of carotene to vitamin A may be deficient in hypothyroidism. The milk of goats consuming their normal diet is pure white; after thyroidectomy the milk becomes yellow. Fasold and Heidemann⁵⁴ showed that the yellow color of such milk is due to carotene and that vitamin A is no longer present in it. The liver of guinea pigs after thyroidectomy contains carotene but no vitamin A.⁵⁵ Wendt⁵⁶ reported that the blood plasma of persons with cretinism contains little vitamin A; after oral administration of carotene there is little rise in the vitamin A of the plasma. This, according to Wendt, is due to a failure of conversion of carotene to vitamin A in cretinism. In hyperthyroidism low values of vitamin A are also found; in this case, because of rapid destruction of vitamin A. After successful treatment with iodine or by surgery, the values increase. After a large dose of vitamin A, the rise in plasma vitamin A is less marked and is more transient than in normal persons.

The evidence just presented appears to indicate that an antagonism exists between the action of thyroxine and that of vitamin A. It must be pointed out, however, that relatively large doses of both substances were used; also that few animals were used in some of the experiments. It seems reasonable to conclude that vitamin A may be more rapidly destroyed by an organism in which the metabolic rate is increased from any cause, including hyperthyroidism. But it is not so easy to understand how vitamin A can decrease the activity of thyroxine. A few observations have been published to show that thyroxine is destroyed *in vitro* by carotene.

Treatment of Adolescent Goiter with Vitamin A.—Fasold⁵⁷ administered "Vogan" (30 drops, three times a day) to seven girls with adolescent goiter; none had signs of hypothyroidism or hyperthyroidism. After three or four weeks the struma in each case had regressed to a remarkable degree, but several weeks after the drug was discontinued the struma recurred. The effect cannot necessarily be ascribed to vitamin A, for "Vogan" in the dose mentioned would furnish about 3.6 micrograms of iodine a day.⁵⁸

Treatment of Hyperthyroidism with Vitamin A.—Wendt⁵⁹ states that after large daily doses of "Vogan" (30 drops, three times a day, the total, 90 drops, contains about 3.6 micrograms of iodine and 145,000 "biologic units" vitamin A) three patients gained weight

and their basal metabolic rate returned nearly to normal; two other patients improved. Dietrich⁵⁹ noted improvement in three of six patients (apparently permanent improvement in two) and none in two. The improvement required weeks. Abelin⁶⁰ regards the use of vitamin A as an aid in the treatment with iodine and with diiodotyrosine, stating that it greatly lessens the crises and the temporary exacerbations that are liable to occur with these forms of medication. Obviously, no conclusions as to the value of vitamin A in this disease are justified until more cases are reported and until the reports deal more critically with the other factors which may bring about improvement, especially the factors associated with the other constituents of the preparations used, with rest and with improved mental outlook.

URINARY SYSTEM

Urinary Lithiasis.—The assertion that diets deficient in vitamin A may cause urinary calculus and that the administration of vitamin A together with an acid ash diet may aid in the solution of urinary calculi has been recently reviewed by the Council on Pharmacy and Chemistry.⁶¹ The Council concludes that there is no doubt that urinary stone may be produced in experimental animals by diets deficient in vitamins A and D and unbalanced in mineral content.⁶² But the majority of investigators fail to find that a deficiency of vitamin A alone will cause stone. Higgins⁶³ is the chief proponent of the claim for the specific effect of lack of vitamin A in the production of urinary stone in man and of its solution by acid ash diets and vitamin A. Kayser, who discussed the paper of Higgins, pointed out that lithiasis, when it does occur in the rat with avitaminosis, is a very late manifestation. Children with deficiency of vitamin A rarely have calculi. In human beings with calculi, epithelial keratinization, the specific lesion of avitaminosis A, is lacking. In a large series of cases of stone, Kayser has failed to find evidence of dietary deficiency in a single case. Many of his patients had had diets rich in milk and eggs. In his experimental and clinical work, Higgins did not try separately the effects of administering vitamin A and acid-producing salts. Since the report was published, Oppenheimer and Pollack⁶⁴ have treated a series of cases of urinary stone with diets rich in vitamins A, B, D, E and G and having an acid ash, administering sufficient ammonium chloride to assure an acid reaction in the urine (p_H below 5.2). Fifty-two patients with stone were studied; twenty-seven were observed for from six to sixteen months (on the average eleven months). In two, uremia and acidosis seemed to have been precipitated by the regimen. In none of the subjects was even partial solution of the calculi demonstrable by x-ray examination; in five, the size of the stone increased and in one, a new stone formed during the treatment.

It may be concluded that, although urinary calculi may be produced in experimental animals by feeding

53. "Vogan" is a concentrate of fish liver oils; 1 cc. contains 40,000 rat units of vitamin A, an unstated amount of vitamin D, and about 6 micrograms of iodine.

54. Fasold, H., and Heidemann, E. R.: Ueber die Gelbfärbung der Milch thyreoprivier Ziegen, *Ztschr. f. d. ges. exper. Med.* 92: 53, 1933-1934.

55. Schneider, E., and Widmann, E.: Die Hepatobormonale Steuerung des Vitamin-A-Umsatzes und die Aetiologie der Ostitis deformans Paget, *Klin. Wchnschr.* 14: 1786 (Dec.) 1935.

56. Wendt, H.: Ueber Veränderungen im Karotin-Vitamin-A-Haushalt beim Myxödem und bei Kretins, *München. med. Wchnschr.* 82: 1679 (Oct.) 1935.

57. Fasold, H.: Ueber die Wirkung des Vitamin A auf das Ovar des Pubertätsalters, *Klin. Wchnschr.* 16: 90 (Jan. 16) 1937.

58. Wendt, H.: Ueber die Behandlung der Basedow'schen Krankheit mit grossen Dosen Vitamin A (Vogan), *München. med. Wchnschr.* 82: 1160 (July) 1935.

59. Dietrich, H. E.: "Schilddrüsenüberfunktion mit Vogan," *München. med. Wchnschr.* 82: 1160 (Nov.) 1936.

60. Abelin, I.: Ueber die Wirkung des A-Vitamins bei der Hyperthyreose, *S. 66: 1106 (Nov.) 1936.*

61. Vitamin A and Urinary Lithiasis, Reports of the Council on Pharmacy and Chemistry, *J. A. M. A.* 105: 1983 (Dec. 14) 1935.

62. McCarrison, Robert: The Experimental Production of Stone in the Bladder, with a Note on Pernicious Anemia and Epidemic Dropsy, *Indian J. M. Research* 14: 895 (April) 1927; The Experimental Production of Stone in the Bladder, *Brit. M. J.* 1: 717 (April 16) 1927.

63. Higgins, C. C.: Vitamin A Deficiency and Urolithiasis, *J. Biol. Chem.* 76: 137 (Jan.) 1928.

64. Oppenheimer, G. D., and Pollack, Herbert: Attempted Solution of Renal Calculi by Dietetic Measures, *J. A. M. A.* 108: 349 (Jan. 30) 1937.

special diets, the factors involved are not yet clearly defined. Further study is required before the results can be applied to man. The view that diets deficient in vitamin A cause urinary lithiasis in man is not supported by the clinical evidence.

REPRODUCTIVE SYSTEM

In the Male.—It has been shown that the testes of rats degenerate in the course of deficiency of vitamin A. Evans⁶⁵ has demonstrated that males eating a diet free of vitamin A but adequate in vitamin E become sterile in three months, whereas those receiving adequate vitamin A but no vitamin E do not become sterile until later. The effects of moderate deficiency of vitamin A on fertility in man are unknown, nor is anything known about the relative importance of moderate deficiency in men and in women.

In the Female.—The vaginal mucous membrane becomes permanently cornified in animals deprived of vitamin A. Observation of the vaginal smear may be used as a method of detecting vitamin A deficiency.⁶⁶ In castrated female rats in which vitamin A deficiency has been produced, injections of the principle from human placenta fail to cause the appearance of mucoid cells in the vagina;⁶⁷ and in castrated female mice with diets deficient in carotene and vitamin A, estrus can be produced by injections of estrogen together with the administration of carotene, but not by estrogen or by the carotene alone.⁶⁸ In uncastrated rats, Mason and Ellison,⁶⁹ by the use of the lavage method of obtaining smears stained supravitaly with neutral red, have been able to demonstrate the presence of estrous cycles even in A-deficient animals in which abnormal cornification has become too severe to permit of their identification by dry stained smears. In castrated animals, small numbers of cornified cells continue to appear even after vitamin A therapy. It is therefore evident that the influence of deficiency of vitamin A on the estrous cycle is not only directly on the vaginal mucous membrane but on or through the ovary also. The effect on the hypophysis is as yet unknown. The influence of excessive doses of vitamin A (as carotene) on the sexual functions of female rats has been studied by Sherwood, Brend and Roper.⁷⁰ In rats receiving a daily dose of carotene equivalent to from 1,500 to 3,750 international units of vitamin A per day, the vaginal smears did not progress from the stage of nucleated epithelium to that of cornified cells. Normal estrous cycles did not return for twenty days after the feeding of the carotene had been discontinued. During the period of ingestion of the carotene, the rats showed no desire to copulate.

In Human Subjects.—Simpson and Mason⁷¹ report that the administration of cod liver oil or of halibut liver oil relieved symptoms and pathologic signs in

thirty cases of senile vaginitis. Fasold⁵⁷ administered a concentrate of fish liver oil ("Vogan"; 30 drops, three times a day=145,000 international units of vitamin A) to seven adolescent girls with large goiters of puberty. In four of the girls the menses ceased for the period of seven months during which vitamin A was administered and were resumed from four to six weeks after the treatment was discontinued. Menstrual disturbances that had been complained of before the treatment did not reappear.

THE BLOOD AND BLOOD FORMING ORGANS

Anemia and Vitamin A Deficiency.—French authors⁷² report that regeneration of hemoglobin and red cells in the anemia induced in dogs by repeated bleedings is facilitated by the administration of carotene. This work lacks confirmation. In seven patients among thirty-five with keratomalacia, Pillat and Yang⁷³ found an anemia which they believe could be explained only as a result of deficiency of vitamin A and which was cured rapidly with cod liver oil. The belief that pernicious anemia is associated with deficiency of vitamin A in the diet has now been discredited. It seems clear that anemia is not a regular symptom of deficiency of vitamin A, and the use of vitamin A for the treatment of the anemias does not rest on a secure foundation.

The Thrombocytes and Vitamin A.—The assertion of Cramer, Drew and Mottram⁷⁴ that the number of thrombocytes is diminished in avitaminosis A seems to have been disproved by Bedson and Zilva,⁷⁵ who used more accurate methods of counting the blood platelets, and by Falconer and Peachey.⁷⁶ Their control animals, however, received a perfectly normal diet and not the basal diet plus vitamin A. Lorenz⁷⁷ believed that "Vogan," a concentrate of fish liver oil, enables the body to "regulate" the number of thrombocytes. In children and in guinea pigs he observed that, following the administration of the drug, originally low platelet counts rose, originally high counts fell. He attributes this effect to vitamin A. Schiff and Hirschberger⁷⁸ at first agreed but later stated that the solvent in "Vogan," sesame oil, contains a hitherto undescribed substance which they designate as vitamin T, which causes a rise in blood platelets.

The Granulocytes and Vitamin A.—Crimm and Short⁷⁹ state that the earliest manifestation of cellular changes associated with vitamin A deficiency in dogs and rats is a "neutrophil index lag"; large doses of vitamin A administered to normal animals or to normal

72. Binet, L., and Strumza, M. V.: Le carotène, son pouvoir hématopoïétique, *Presse méd.* 40: 41 (Jan. 9) 1932.

73. Pillat, Arnold, and Yang, C. S.: The Blood Picture in Keratomalacia of Adults, *Arch. Ophth.* 4: 309 (Sept.) 1930.

74. Cramer, W.; Drew, A. H., and Mottram, J. C.: On the Function of the Lymphocyte and of Lymphoid Tissue in Nutrition, with Special Reference to the Vitamin Problem, *Lancet* 2: 1202 (Dec. 10) 1921.

75. Bedson, S. P., and Zilva, S. S.: The Influence of Vitamin A on the Blood Platelets of the Rat, *Brit. J. Exper. Path.* 4: 5 (Feb.) 1923.

76. Falconer, E. H., and Peachey, G.: Blood Counts in Vitamin A Deficiency Disease, with Special Reference to the Platelets, *Am. J. Physiol.* 76: 145 (March) 1926.

77. Lorenz, E.: Der Einfluss des A-Vitamins auf die Thrombozyten, *Ztschr. f. Kinderh.* 58: 504 (Dec.) 1936.

78. Schiff, E., and Hirschberger, C.: Weitere Untersuchungen zur Frage des Morbus maculosus Werlhofi: II. Einfluss der Vitamine A, B₁, B₂, C, D und des Eigelbs auf die Zahl der Thrombozyten im Kinderrn Jahr. f. Kinderh. 146: 181, 1935; zur Frage des Morbus maculosus Werlhofi: III. A, B₂ und des Eigelbs auf die Zahl der Thrombozyten und die Blutungszeit beim Morbus mac. Werlhofi, *ibid.*, p. 191; Weitere Untersuchungen zur Frage des Morbus maculosus Werlhofi: IV. Ein bisher unbekannter Thrombozytose herbeiführender Stoff, der fettlösliche T-Faktor, *ibid.*, p. 293; Weitere Untersuchungen zur Frage des Morbus maculosus Werlhofi: V. A-Vitamin und Thrombozytose, *ibid.* 147: 81, 1936.

79. Crimm, P. D., and Short, D. M.: Qualitative Blood Cell Changes in the Rat Due to Vitamin A, *Am. J. Physiol.* 111: 397 (March) 1935; Qualitative Blood Cell Changes in the Human Due to Vitamin A, *J. Indiana M. A.* 28: 175 (April) 1935; Vitamin A Deficiency in the Dog, *Am. J. Physiol.* 118: 477 (March) 1937.

65. Evans, H. M.: Testicular Degeneration Due to Inadequate Vitamin A in Cases Where Vitamin E Is Adequate, *Am. J. Physiol.* 99: 477 (Jan.) 1932.

66. Baumann, C. A., and Steenbock, Harry: Vaginal Smear Method of Determining Vitamin A, *Science* 76: 417 (Nov. 4) 1932. Hohlweg, Walter, and Dohrn, Max: The Determination of Vitamin A by Means of Its Influence on the Vaginal Contents of the Rat, *Biochem. J.* 30: 932 (May) 1936.

67. Aberle, S. B. D.: The Interrelation of a Gonadotropic Hormone and Vitamin A, *Am. J. Physiol.* 106: 267 (Nov.) 1933.

68. von Euler, H.; Zondek, Bernhard, and Klusmann, E.: Carotinoide, Vitamin E, und Sexualhormone, *Arkiv. för Kemi, Mineralogi och Geol.*, 1932, 11B, No. 2, pp. 1-5.

69. Mason, K. E., and Ellison, E. T.: Changes in the Vaginal Epithelium of the Rat After Vitamin A Deficiency, *J. Nutrition* 9: 735 (June) 1935; Demonstration of Oestrus in the Vitamin A Deficient Rat by Supravital Study of the Vaginal Smears, *ibid.* 10: 1 (July) 1935.

70. Sherwood, T. C.; Brend, M. A., and Roper, E. A.: Changes in the Vaginal Epithelium of the Rat on an Excessive Vitamin A Diet, *J. Nutrition* 11: 593 (June) 1936.

71. Simpson, J. W., and Mason, K. E.: A New Concept of Senile Vaginitis, *Am. J. Obst. & Gynec.* 32: 125 (July) 1936.

persons (70,000 international units daily) cause a shift to the left in the neutrophilic index. This shift is not due to vitamin D. It would seem evident from this work that the lag is not marked enough to be of value in the diagnosis of avitaminosis; the shift to the left requires large amounts of vitamin A administered over a long period and is not present in active infections, possibly because a shift has already occurred.

It may be concluded that no very striking effect of vitamin A on the cellular elements of the blood has been discovered.

VITAMIN A AND THE NERVOUS SYSTEM

Edward Mellanby⁸⁰ stated that, when diets containing a large amount of cereal (other than yellow maize) and deficient in vitamin A are eaten by young puppies, degenerative changes occur in the spinal cord; demyelination can be demonstrated by the Marchi stain. The presence of any source of vitamin A in the diet (cod liver oil, butter or carotene) prevents or diminishes this change. He believed that the nervous symptoms in convulsive ergotism, pellagra, lathyrism, the subacute combined degeneration in pernicious anemia, tabes dorsalis and multiple sclerosis may be related to deficiency of vitamin A. In 1935 Mellanby⁸¹ reported demyelination, chiefly of the peripheral nervous system, in growing rabbits consuming a diet poor in vitamin A and reiterated his belief that diets high in cereal aggravate the condition. Later he ascribed the metaplasia of specific epithelium to lesions of the trophic nerve fibers due to deficiency of vitamin A.

Using adult dogs, Suzman, Muller and Ungley⁸² were unable to produce lesions in the nervous system or abnormal nervous symptoms as a result of the ingestion of diets free of vitamin A and containing an excess of cereal. Their animals, at least toward the end of the experiment, had exhausted their stores of vitamin A. In a certain number of rats, but not in all, consuming diets deficient in vitamin A, Zimmerman⁸³ and Zimmerman and Cowgill⁸⁴ were able to observe incoordination and muscular weakness. In these rats only they observed degeneration of the spinal cord and of the peripheral nerves. The diets contained no cereal but contained an adequate amount of unsaturated fatty acids. Sutton, Setterfield and Krauss⁸⁵ were able to demonstrate in frozen sections with polarized light myelin degeneration of the peripheral nerves in rats receiving a diet deficient in vitamin A. The degeneration occurred at about the same time as did xerophthalmia. Aberle⁸⁶ found that the appearance of nervous symptoms was always later than the continuous appearance of cornified vaginal cells.

Bartz and Schmitt⁸⁷ were able to demonstrate by satisfactory methods the presence of relatively large

amounts of carotene and of vitamin A in the peripheral nerves of frogs and to show that starvation depletes the supply whereas feeding with carotene restores both the carotene and the vitamin A content.

More knowledge is obviously required as to (a) the function of vitamin A in the nervous system, (b) the other deficiencies in the diets used, (c) the influence of the age of the subject, and (d) the possible specific effects of cereals, before any intelligent application can be made of this experimental work to the treatment of nervous disorders in man.

TUMORS

The incorrect assumption that vitamin A is the "growth vitamin" has led several investigators to study the effect of vitamin A on the growth of tumors. The conflicting results were summarized by Baker.⁸⁸ She was able to show that highly purified vitamin A—but not carotene—in suitable concentration stimulates the growth of fibroblasts in tissue culture; higher concentrations are distinctly toxic. Kuh⁸⁹ reported that the amount of vitamin A present in the usual diet has no effect on the growth of transplanted tumors in mice but that large doses of carotene inhibit the growth of such tumors, provided the animal can convert the carotene to vitamin A. The effective dose on the basis of weight would be equivalent to 0.6 Gm. of carotene, i. e., 1,000,000 international units daily for a person weighing 60 Kg. Dittmar⁹⁰ reports that large doses of vitamin A decrease the percentage of successful tumor implants in mice. As the doses were from 1,000 to 2,000 rat units daily, it seems possible that he may have been dealing with a toxic effect due either to the vitamin itself or to some other substance in the concentrate. Lustig and Wachtel⁹¹ believe that local applications of concentrates of vitamin A assist in the healing of malignant ulcers, provided radium also is used. The influence of vitamin A deficiency on the growth of tumors has been little studied, because complete deficiency is likely to be fatal before the growth of the tumors can be accurately observed. Wolbach and Howe⁹² state their belief that in man defective formation of the enamel of the teeth, denticles, pulp bone and cemento-exostoses may reasonably be regarded as possibly due to vitamin A deficiency. Orten, Burn and Smith⁹³ produced moderate deficiency of vitamin A in rats by feeding the animals on a diet deficient in the vitamin from weaning until signs of deficiency developed, then supplementing the diet with from 0.7 to 6 international units of vitamin A daily. In those rats which survived for a year, they found quite constantly large painless odontomas of the maxillae developing from the embryonic cells of the pulp.

LOCAL TREATMENT OF BURNS, ULCERS AND INFECTIONS

The local treatment of infections, burns and fresh wounds with applications of ointments containing cod

80. Mellanby, Edward: The Experimental Production and Prevention of Degeneration in the Spinal Cord, *Brain* 54: 247 (Sept.) 1931.

81. Mellanby, Edward: Lesions of the Central and Peripheral Nervous Systems Produced in Young Rabbits by Vitamin A Deficiency and a High Cereal Intake, *Brain* 58: 141 (June) 1935.

82. Suzman, M. M.; Muller, G. L., and Ungley, C. C.: An Attempt to Produce Spinal Cord Degeneration in Dogs Fed a High Cereal Diet Deficient in Vitamin A: The Incidental Development of a Syndrome of Anemia, Skin Lesions, Anorexia and Changes in the Concentration of Blood Lipoids, *Am. J. Physiol.* 101: 529 (Aug.) 1932.

83. Zimmerman, H. M.: Lesions of the Nervous System in Vitamin Deficiency: I. Rats on a Diet Low in Vitamin A, *J. Exper. Med.* 57: 215 (Feb. 1) 1933.

84. Zimmerman, H. M., and Cowgill, G. R.: Lesions of the Nervous System in Vitamin Deficiency: IV. The Effect of Carotene in the Treatment of the Nervous Disorder in Rats Fed a Diet Low in Vitamin A, *J. Nutrition* 11: 411 (May) 1936.

85. Sutton, T. S.; Setterfield, H. E., and Krauss, W. E.: Nerve Degeneration Associated with Avitaminosis A in the White Rat, *Bull.* 545, Ohio Agric. Exper. Sta., December 1934.

86. Aberle, S. B. D.: Neurological Disturbances in Rats Reared on Diets Deficient in Vitamin A, *J. Nutrition* 7: 445 (April) 1934.

87. Bartz, J. P., and Schmitt, F. O.: Carotene and Associated Pigments in Medullated Nerve, *Am. J. Physiol.* 117: 280 (Oct.) 1936.

88. Baker, Lillian E.: Effect of Vitamin A on Proliferation of Fibroblasts, *Proc. Soc. Exper. Biol. & Med.* 33: 124 (Oct.) 1935.

89. Kuh, Clifford: A Study of Vitamin A in Relation to Experimental Cancer, *Yale J. Biol. & Med.* 5: 123 (Dec.) 1932.

90. Dittmar, C.: Ueber den Einfluss der Kost auf das Wachstum von Impftumoren, *Ztschr. f. Krebsforsch.* 44: 73, 1936.

91. Lustig, B., and Wachtel, H.: Therapeutische Versuche mit Vitamin A beim Krebs, *Ztschr. f. Krebsforsch.* 44: 53 (June) 1936.

92. Wolbach, S. B., and Howe, P. R.: The Incisor Teeth of Albino Rats and Guinea Pigs in Vitamin A Deficiency and Repair, *Am. J. Path.* 9: 275 (May) 1933.

93. Orten, A. U.; Burn, C. G., and Smith, A. H.: Effects of Prolonged Chronic Vitamin A Deficiency in the Rat, with Special Reference to Odontomas, *Proc. Soc. Exper. Biol. & Med.* 36: 82 (Feb.) 1937.

liver oil or concentrates has been enthusiastically advocated by Löhr.⁹⁴ He ascribed his apparently successful results in part to a bactericidal influence of the preparations used, in part to a stimulation of growth of epithelium. He presented illustrative cases but no controlled observations. He later⁹⁵ described the treatment of acute and chronic osteomyelitis by means of local applications of cod liver oil ointment and plaster bandages.

Andernach and Löhr⁹⁶ advocate the injection of cod liver oil into the joint spaces in chronic arthritis of various types; a rather severe (sterile?) inflammation ensues, following which improvement occurs, probably as a result of hyperemia. Their cases, however, are not analyzed from a statistical standpoint. Several other authors have reported good results from the use of local applications of ointments containing vitamins A and D.⁹⁷ Solutions of carotene in oil have been recommended by Rachet and Busson⁹⁸ for the local treatment of ulcerative colitis. The work was not controlled by the use of oil without carotene. Balachowski⁹⁹ used colloidal carotene in salt solution for the local treatment of superficial lesions of the eye, gingivitis, chilblains, fissures and inflammations. As he states that the treatment was just as effective after the solutions had become bleached, it is not possible to attribute his results to the action of carotene.

The clinical work just reviewed seems to have been done without a preliminary experimental study of the possible factors involved. The experimental work done by other investigators throws doubt on any specific action of the vitamins contained in the preparations applied locally. Lauber and Rocholl¹⁰⁰ find that the base of the ointment used is effective. Lundh¹⁰¹ studied the healing of wounds produced in guinea pigs, treating the wounds on one side with various ointments and permitting the wound on the other side to heal without an ointment. Cod liver oil did not promote healing; the wounds treated with yellow petrolatum healed more slowly than the wounds exposed to dry air; the wounds treated by an ointment containing 10 per cent zinc oxide or 10 per cent zinc oxide and 1 per cent halibut liver oil healed in twenty-five days. Those treated with an ointment containing 10 per cent or 25 per cent halibut liver oil healed in twenty-three days. As he gives only the average time of healing and not the times of healing for the individual animals, it is not possible to accept his conclusion that the difference is significant, much less that it is a specific effect. Finally, the differences are so small that they by no means justify the enthusiasm of the clinical reports.

VITAMIN A AND INFECTIONS

Severe spontaneous infections in animals with xerophthalmia were first reported by McCollum.¹⁰² Such infections cannot be prevented by vitamin D but can be prevented by the administration of cod liver oil or of carotene in amounts sufficient to prevent the development of symptoms of deficiency of vitamin A.¹⁰³ Animals suffering from deficiency of vitamin A are more susceptible than control animals to a variety of infections artificially produced either by inoculation through the mouth or by intraperitoneal injection of cultures.¹⁰⁴ The loss of resistance may appear even before other symptoms of vitamin A deficiency,¹⁰⁵ and it may appear in animals receiving a diet considered nearly adequate, as in the experimental epidemics in mice studied by Webster and Pritchett¹⁰⁶ and by Pritchett.¹⁰⁷ The study of experimental epidemics, of obvious importance for infections in man, has demonstrated the possibility that moderate degrees of deficiency may lower resistance but that many more factors are involved than deficiency of vitamin A.¹⁰⁸

The mechanism of lowered resistance to infection in vitamin A deficiency is not understood. Although poor general condition plays a role,¹⁰⁹ infection seems more likely to occur in animals suffering from a deficiency of vitamin A than in those with a deficiency of other vitamins. The characteristic lesion in animals with fully developed vitamin A deficiency is degeneration of specialized epithelium which is replaced by keratinizing epithelium. In the case of the respiratory tract, alterations of the mucous membranes are undoubtedly the chief cause of spontaneous infections. In case of infections following inoculation into the blood stream or peritoneal cavity, and in case of loss of resistance in moderate deficiency of vitamin A, some other mechanism must be involved. The majority of writers agree that both the normal antibodies of the serum and the power to produce antibodies are not affected by dietary

102. McCollum, E. V.: The Supplementary Dietary Relationships Among Our Natural Foodstuffs, *J. A. M. A.* 68: 1379 (May 12) 1917. Drummond, J. C.: Researches on the Fat-Soluble Accessory Substance: I. Observations upon Its Nature and Properties, *Biochem. J.* 13: 81 (May) 1919. Mellanby, Edward: An Experimental Investigation on Rickets, *Lancet* 1: 407 (March 15) 1919. Daniels, Amy L.; Armstrong, Margaret E., and Hutton, Mary K.: Nasal Sinusitis Produced by Diets Deficient in Fat-Soluble A Vitamin, *J. A. M. A.* 81: 828 (Sept. 8) 1923. 103. Green, H. N., and Mellanby, Edward: Vitamin A as an Anti-Infective Agent, *Brit. M. J.* 2: 691 (Oct. 20) 1928; Carotene and Vitamin A: The Anti-Infective Action of Carotene, *Brit. J. Exper. Path.* 11: 81 (April) 1930.

104. Ørskov, J., and Moltke, O.: Studien über den Infektionsmechanismus bei verschiedenen Paratyphus-Infektionen an weissen Mäusen, *Ztschr. f. Immunitätsforsch. u. exper. Therap.* 59: 357 (Dec.) 1928. Ørskov, J., and Lassen, H. C. A.: Die Bedeutung der Grösse der primären Infektionsdosis bei einigen natürlichen Infektionen, *Ztschr. f. Immunitätsforsch. u. exper. Therap.* 67: 137 (June) 1930. Lassen, H. C. A.: Vitamin A Deficiency and Resistance Against a Specific Infection, *J. Hyg.* 30: 300 (Aug.) 1930; Experimental Studies on the Course of Paratyphoid Infections in Avitaminic Rats, with Special Reference to Vitamin A Deficiency, Copenhagen, Levin and Munksgaard, 1931; Die Bedeutung der Vitamine für den Verlauf von Infektionen, *Ztschr. f. Immunitätsforsch. u. exper. Therap.* 73: 221 (Jan.) 1931.

105. Boynton, L. C., and Bradford, W. L.: Effect of Vitamins A and D on Resistance to Infection, *J. Nutrition* 4: 323 (Sept.) 1931.

106. Webster, L. T., and Pritchett, I. W.: Microbic Virulence and Host Susceptibility in Paratyphoid Enteritidis Infection of White Mice: V. The Effect of Diet on Host Resistance, *J. Exper. Med.* 40: 397 (Sept.) 1924.

107. Pritchett, I. W.: Microbic Virulence and Host Susceptibility in Paratyphoid Enteritidis Infection of White Mice: XII. Effect of Diet on Host Resistance, Further Studies, *J. Exper. Med.* 46: 557 (Oct.) 1927.

108. Webster, L. T.: The Role of Microbic Virulence, Dosage and Host Resistance in Determining the Spread of Bacterial Infections Among Mice: I. Pasteurella Lepisepctica and Pasteurella Avisepctica Infections, *J. Exper. Med.* 52: 901 (Dec.) 1930. Topley, W. W. C.; Greenwood, M., and Wilson, J.: The Effect of Diet in Epidemic Infections in Mice, *J. Path. & Bact.* 34: 163, 1931. Watson, Marion: Studies on the Influence of Diet on Resistance to Infection: I. The Effect of Various Diets on the Fertility, Growth and Survival of Mice, *J. Hyg.* 37: 396 (July) 1937; Studies on the Influence of Diet on Resistance to Infection: II. The Effect of Various Diets on the Resistance of Mice to Bacterial Infection, *ibid.* 37: 420 (July) 1937.

109. Arons, P., and van der Rijst, M. P. J.: The Cause of Infections Following Lack of Vitamin A, *Nederl. tijdschr. v. geneesk.* 76: 5445 (Nov. 26) 1932. Harris, L. J.; Innes, J. R. M., and Griffith, A. S.: On the Pathogenesis of Avitaminosis A, Vitamin A as the Antikeratinizing Factor, *Lancet* 2: 614 (Sept. 17) 1932.

94. Löhr, W.: Ueber die Lebertransalbenbehandlung (mit und ohne Gipsverband) bei frischen Verletzungen, Verbrennungen, und phlegmonösen Entzündungen, *Zentralbl. f. Chir.* 61: 1686 (July 21) 1934.

95. Löhr, W.: Die Behandlung der akuten und chronischen Osteomyelitis der Röhrenknochen mit dem Lebertranngips, *Deutsche med. Wchnschr.* 62: 997 (June 19) 1936.

96. Andernach, F., and Löhr, W.: Die Behandlung der chronischen Arthritis mit Lebertran injektionen ins Gelenk, *Zentralbl. f. Chir.* 63: 2493 (Oct. 17) 1936.

97. Horn, Z., and Sándor, S.: Die lokale Anwendung des A-Vitamins in der Wundbehandlung, *Deutsche med. Wchnschr.* 60: 1018 (July 6) 1934. Zoltan, L.: Vitamine in der Wundbehandlung, *Zentralbl. f. Chir.* 62: 3031 (Dec. 21) 1935. Sándor, S.: Vitamin A in the Local Treatment of Wounds, *Lancet* 2: 738 (Sept. 26) 1936.

98. Rachet, A. J., and Busson, A.: Le traitement des recto-colites ulcéreuses par la vitamine A, *Paris méd.* 95: 308 (April 6) 1935.

99. Balachowski, S.: Sur la possibilité d'insuffisances locales en vitamines, considérations théoriques et application thérapeutique, *Presse méd.* 42: 1404 (Sept. 8) 1934.

100. Lauber, H. J., and Rocholl, H.: Experimentelle Untersuchungen über die Einwirkung Vitaminhaltiger Salben auf die Wundheilung, *Klin. Wchnschr.* 14: 1143 (Aug. 10) 1935.

101. Lundh, G.: Experimentelle Untersuchungen der Wundheilung bei Tieren mit Lebertran, *Zentralbl. f. Chir.* 63: 2860 (Nov. 28) 1936.

deficiencies excepting in the terminal stages and that deficient animals are not more susceptible than controls to bacterial toxins.¹¹⁰ The defensive response of the tissues in vitamin deficiency has not been adequately studied.

Resistance to infection in man may be decreased in cases with marked deficiency of vitamin A. Bloch¹¹¹ reported that children suffering with xerophthalmia are liable to severe infections and that, even after recovery from the deficiency, their liability to death from infection remains high for years.¹¹² The majority of observers agree with Bloch's conclusions that infections are frequent and severe in cases of xerophthalmia, but Spence¹¹³ failed to observe this. Moderate degrees of vitamin A deficiency have been assumed to lower resistance to infection in man. Four methods have been used to show that vitamin A deficiency might exist in the group subject to infection and not in the control group: (1) calculation of the intake of vitamin A in the two groups, (2) analysis of the liver for vitamin A in persons dying of infection and in those dying from accident, (3) analysis of the blood for carotene and for vitamin A, and (4) the demonstration of night blindness in the group subject to severe infection. The first method is essentially that of Barenberg and Lewis,¹¹⁴ of Hess, Lewis and Barenberg¹¹⁵ and of Wright, Frosst, Richel and Lawrence.¹¹⁶ They were unable to lessen the incidence or the severity of respiratory infection in groups of infants by administering cod liver oil, halibut liver oil or carotene. However, the infants in their control group were already receiving adequate amounts of vitamin A. It is also possible that an inadequate diet at an age earlier than that of their subjects may be of importance.¹¹⁷ Analyses of the liver have been carried out by several authors,¹¹⁸ who agree that low values are usual in the livers of persons dying of infections. But it must be emphasized that the stores of vitamin A are depleted during periods of underfeeding and by infection itself. Analyses of the blood for carotene and for vitamin A¹¹⁹ also show a decrease during infection. In children subject to repeated respiratory infections, but not recently ill, the average level of blood carotene is lower than in other children. But the increased liability to infection which could be ascribed to low blood carotene is only about 10 per cent.¹²⁰ The recent rather intensive study of

night blindness has afforded a more direct method of ascertaining the presence of moderate degrees of vitamin A deficiency. Jeghers¹²¹ in a group of 162 medical students found fifty, or 36 per cent, whose visual adaptation to dim light was subnormal and fifty whom he regarded as certainly normal. The calculated daily intake of vitamin A in the subnormal group was 2,445 international units; in the normal group it was 5,500. The incidence of colds during the preceding year was nearly equal (2.2 per person vs. 2.1), but the duration was 7.4 days in the subnormal group and 5.4 days in the normal group. It is obvious that the differences are not very great and certainly do not justify terming vitamin A "the anti-infective vitamin." More studies of this type are essential.

Within the past few years, several authors have studied the effect of administering vitamin A on the incidence or on the course of infections. In these studies, no attempt was made to ascertain the presence or the absence of vitamin A deficiency. A favorable effect from administration of vitamin A has been claimed on the outcome in pneumonia by Donaldson and Tasker¹²² and in measles by Ellison.¹²³ In studies which seem to have been better controlled, no favorable effect was found in pneumonia by Orenstein,¹²⁴ in measles by Mackay and her co-workers,¹²⁵ in the complications of scarlet fever by Sutliff and his co-workers,¹²⁶ or by Clausen,¹²⁷ and in pertussis by Sehestedt.¹²⁸ It was shown that the vitamin was absorbed.¹²⁷ The literature on the effect of the administration of vitamin A on the prophylaxis of illness, especially of colds, is also conflicting. Most of the reports state that the severity of colds is less in the group receiving vitamin A. Some of the reports state that the incidence of colds is also less.¹²⁹ Although the investigators attempted to secure adequate controls, it was usual to select volunteers for the experimental groups. The stated incidence of colds during a previous year was often compared with the observed incidence during the experiment. The subjective element was not always eliminated. In Cameron's study¹³⁰ this factor was recognized and her control subjects received

110. Robertson, E. C.: The Vitamins and Resistance to Infection, *Medicine* 13:123 (May) 1934. Gellhorn, Ernst, and Dunn, Joan O.: The Influence of Lack of Vitamin A in the Diet on Phagocytosis Promoting Properties of the Blood Serum, *J. Nutrition* 13:317 (March) 1937. Torrance, C. C.: The Relation Between Vitamin A Metabolism and Susceptibility to Diphtheria Toxin, *Am. J. Hyg.* 18:375 (Sept.) 1933; Further Studies on the Relation Between Vitamin A Metabolism and Susceptibility to Bacterial Toxins, *ibid.* 23:74 (Jan.) 1936. Clausen.¹¹¹

111. Bloch, C. E.: Decline in Immunity as a Symptom Due to Deficiency in A Vitamin and in C Vitamin, *Acta paediat., Supp. 2*, (Lecture, 14th Scandinavian Paediatric Congress) 7: 61, 1928.

112. Bloch, C. E.: Effects of Deficiency in Vitamins in Infancy, *Am. J. Dis. Child.* 42:263 (Aug.) 1931.

113. Spence, J. C.: A Clinical Study of Nutritional Xerophthalmia and Night-Blindness, *Acta paediat.* (Trans. Second Int'l Ped. Congress, Stockholm, Sweden) 11:541, 1930.

114. Barenberg, L. H., and Lewis, J. M.: Relationship of Vitamin A to Respiratory Infection in Infants, *J. A. M. A.* 98:199 (Jan. 16) 1932.

115. Hess, A. F.; Lewis, J. M., and Barenberg, L. H.: Does Our Dietary Require Vitamin A Supplement? *J. A. M. A.* 101:657 (Aug. 26) 1933.

116. Wright, H. P.; Frosst, J. B.; Richel, F., and Lawrence, M. R.: Vitamin A and the Common Cold, *Canad. M. A. J.* 25:412 (Oct.) 1931.

117. Clausen, S. W.: The Influence of Nutrition upon Resistance to Infection, *Physiol. Rev.* 14:309 (July) 1934.

118. Laqueur, E.; Wolff, L. K., and Dingemans, E.: Ueber den Gehalt der Leber an Vitamin A (im besonderen beim Menschen), *Deutsche med. Wchnschr.* 54:1495 (Sept. 7) 1928. Moore, T.: Vitamin A Reserves of the Human Liver in Health and Disease, with Special Reference to the Scope of Vitamin A as an Anti-Infective Agent, *Lancet* 2:669 (Sept. 24) 1932. Wolff, L. K.: On the Quantity of Vitamin A Present in the Human Liver, *Lancet* 2:617 (Sept. 17) 1932.

119. McCoord, A. B., and Clausen, S. W.: Unpublished data.

120. Clausen (footnotes 25 and 127).

121. Jeghers, Harold: The Degree and Prevalence of Vitamin A Deficiency in Adults, with a Note on Its Experimental Production in Human Beings, *J. A. M. A.* 109:756 (Sept. 4) 1937.

122. Donaldson, S., and Tasker, J.: Preliminary Notes on the Treatment of Pneumonia with Vitamin A, *Proc. Transvaal Mine Medical Officers Assn.* 9:64, Nos. 107-108 (Feb.-March) 1930.

123. Ellison, J. B.: Intensive Vitamin Therapy in Measles, *Brit. M. J.* 2:708 (Oct. 15) 1932.

124. Orenstein, A. J.: Vitamin A in Treatment of Pneumonia, *South African M. J.* 6:685 (Nov. 12) 1932.

125. Mackay, Helen M. M.; Lintford, Hilda M.; Mitman, Maurice, and Wild, Mary H.: The Therapeutic Value of Vitamins A and D in Measles, *Arch. Dis. Childhood* 11:127 (June) 1936.

126. Sutliff, W. D.; Place, E. H., and Segool, S. H.: Cod Liver Oil Concentrate (Concentrated Vitamins A and D): Ineffectiveness of Large Doses in the Prophylaxis of Otitis Media Complicating Scarlet Fever, *J. A. M. A.* 100:725 (March 11) 1933.

127. Clausen, S. W.: The Exploitation of Vitamin A, *New York State J. Med.* 34:154 (Feb. 15) 1934.

128. Sehestedt, H.: Die Beziehungen zwischen der Widerstandsfähigkeit der Kinder gegen Infekte der oberen Luftwege und dem Gehalt der Nahrung an Vitamin A, *Monatsschr. f. Kinderh.* 63:351, 1935.

129. Holmes, A. D.; Pigott, M. G.; Sawyer, W. A., and Comstock, L.: Vitamins Aid Reduction of Lost Time in Industry, *J. Indust. & Engin. Chem.* 24:1058 (Sept.) 1932; The Influence of Body Weight and the Administration of Cod Liver Oil on Industrial Absenteeism, *J. Am. Dietet. A.* 10:208 (Sept.) 1934; Cod Liver Oil: A Five Year Study of Its Value for Reducing Industrial Absenteeism Caused by Colds and Respiratory Diseases, *Industrial Med.* 5:359 (July) 1936.

130. Cameron, Hazel C.: The Effect of Vitamin A upon Incidence and Severity of Colds Among Students, *J. Am. Dietet. A.* 11:189 (Sept.) 1935.

a placebo of lactose. Cameron also calculated the daily intake of vitamin A. She found that, although the incidence of colds was not decreased by adding 5,000 international units of vitamin A to a diet already containing 4,300 units, the duration was decreased. The general criticisms just raised to this type of study have been met in the report of Shibley and Spies.¹³¹ These authors studied groups of students selected by random sampling; no subject knew to which group he belonged; the record of infections was accurate. One group received 200,000 international units of vitamin A and 4,000 units of vitamin D per week; another received, as viosterol, 400 units of vitamin D, and the third received maize oil. The seasonal incidence of colds and their severity were alike in all groups. The duration of colds was significantly shorter in those students who received vitamin A.

The evidence reviewed indicates that severe deficiency of vitamin A lowers resistance to infection in man and that the administration of vitamin A during the course of an infection probably has no beneficial effect on the outcome unless severe deficiency is present. There is evidence that moderate deficiency of vitamin A may also increase the duration or severity of respiratory infections in man; that an adequate intake of vitamin A may lessen the severity and duration of infection in persons moderately deficient. It is also evident that many other factors are of equal or greater influence on infection, and no justification exists for calling vitamin A "the anti-infective vitamin."

HYPERVITAMINOSIS: INJURIOUS EFFECTS ASCRIBED TO PREPARATIONS OF VITAMIN A

When large amounts of pure carotene in a suitable solvent are administered to animals by mouth or by injection, no harmful effects are observed,¹³² although Lewis and Reti observed that the impure lipid soluble extract of carrots is toxic. In human beings following the ingestion of large amounts of vegetables containing carotene, and also in persons suffering from certain metabolic disorders, especially diabetes, carotene may accumulate in the skin in amounts sufficient to cause a deep yellow color known as xanthosis cutis. The term "carotenemia," although frequently applied to this condition, is not an appropriate designation, for carotenoid pigments are usually present in the plasma of human blood, and in lipid nephrosis a marked increase of the plasma carotene may exist¹³³ without xanthosis cutis. No harmful effects have been ascribed to hypercarotenemia, but xanthosis cutis may be mistaken for jaundice.

When large amounts of concentrated preparations of vitamin A are administered to certain animals, injurious effects are observed. It is likely that some of these effects are due to vitamin A, but satisfactory proof is lacking because pure preparations of vitamin A were not used. It has been shown that the injurious effects do not occur if the vitamin is destroyed in the preparations by oxidation or by ultraviolet irradiation. This argument is not convincing because these procedures may destroy some other toxic substance.

Drigalski¹³⁴ administered 0.5 and 1 cc. daily of a concentrate of fish liver oil ("Vogan"; 1 cc. = 40,000

rat units of vitamin A) to rats weighing 100 Gm. Their coats became rough; cachexia, catarrhal conjunctivitis, hemorrhagic rhinitis and diarrhea developed. Death occurred within five to eight days in the animals receiving the larger dose and within seven to nineteen days in those receiving the smaller dose. At autopsy Drigalski and Laubmann¹³⁵ found degeneration of the renal glomeruli and tubules, proliferation of the reticulo-endothelial cells of the spleen, absence of striations in some of the cardiac muscle fibers, degeneration of the testes, and only slight changes in the liver. Moll, Domagk and Laquer¹³⁶ report similar injuries in mice, and Fasold¹³⁷ calls attention to an elective fatty infiltration in the Kupffer cells of the liver. Collazo and Rodriguez¹³⁸ add to the symptoms exophthalmos and spontaneous fractures. The lesions of the bones suggested osteomalacia¹³⁹ but could not be prevented by large doses of vitamin D. Rossi¹⁴⁰ doubted the existence of "hypervitaminosis A"; but the dose of vitamin used by him was about 400 units a day for the rat, whereas the other investigators had used from 20,000 to 40,000 units a day.

The literature which deals with injurious effects following the use of cod liver oil or of relatively small amounts of concentrates is very difficult to evaluate. Hopkins¹⁴¹ found that an excess of cod liver oil in the diet of rats was injurious unless "balanced" by the addition of vitamin B complex. Following this observation, the theory of vitamin balance has developed,¹⁴² but while accepting the observations as accurate, it is obvious that one must consider not only the relative amounts of vitamins but also the relative amounts of minerals and of other substances. As a rule the basic diets have been artificial ones, unusual for the species of animals being studied. Swedish workers report that cod liver oil, even in such small doses as 0.1 cc. per kilogram daily, may cause a variety of injurious effects, especially on the heart muscle, in mice, rats, rabbits, dogs, calves, cats, pigs, and human infants.¹⁴³ Norris and Church¹⁴⁴ have stated that the symptoms resemble those due to deficiency of vitamin B complex and may be due to isoamylamine in the small

135. von Drigalski, W., and Laubmann, W.: Ueber Schädigungen durch Vitamin A, *Klin. Wehnschr.* 12: 1171 (July 29) 1933.

136. Moll, T.; Domagk, G., and Laquer, F.: Ueber das Vitamin A-Konzentrat "Vogan" und seine Wertbestimmung, *Klin. Wehnschr.* 12: 465 (March 25) 1933.

137. Fasold, H.: Zur Kenntnis der Lipidanreicherungen nach grösseren Gaben an Vitamin A, *Ztschr. f. d. ges. exper. Med.* 94: 35, 1934.

138. Collazo, J. A., and Rodriguez, J. S.: Hypervitaminose A: Die Symptomatologie der durch Fütterung von reinem A-vitamin an jungen Ratten hervorgerufenen Hypervitaminose A, *Klin. Wehnschr.* 12: 1732 (Nov. 4) 1933; Hypervitaminose A: II. Exophthalmus und Spontanfrakturen, *ibid.* 12: 1768 (Nov. 11) 1933.

139. Strauss, K.: Beobachtungen bei Hypervitaminose A, *Beitr. z. path. Anat. u. z. allg. Path.* 94: 345 (Dec.) 1934.

140. Rossi, G.: Gibt es eine Vitamin A-Hypervitaminose? *Ztschr. f. Vitaminforsch.* 2: 194 (July) 1933.

141. Hopkins, F. G.: The Present Position of the Vitamin Problem, *Brit. M. J.* 2: 691 (Oct. 20) 1923.

142. Harris, L. J., and Moore, T.: "Hypervitaminosis" and "Vitamin Balance," *Biochem. J.* 22: 1461, 1928. Harris, L. J., and Moore, T.: Hypervitaminosis and Vitamin Balance: IV. An Instance of Vitamin Balance, *ibid.* 23: 1114, 1929. Stepp, W., and Schröder, H.: Ueber den Antagonismus der Vitamine und seine Bedeutung für die Vitamintherapie, *Klin. Wehnschr.* 15: 548 (April 18) 1936.

143. Agduhr, E.: Postnatal Development Under Different Conditions of Nutrition and Circumstances of Functioning: I. The Changes in the Heart Through the Presence of Cod Liver Oil (Oleum Jecoris Aselli) in the Food, *Acta paediat.* 5: 319, 1926; Changes in the Organism Caused by Cod Liver Oil Added to the Foods, *ibid.* 6: 165, 1926. Höjer, A.: Changes in the Heart Through the Presence of Cod Liver Oil in the Food: Effect of Cod Liver Oil by Deficiency in Vitamin B, *ibid.* 6: 180, 1926. Agduhr, E.: Are the So-Called A Vitamins in Cod Liver Oil the Cause of Its Toxic Effect on the Organism, and Can a Basal Diet Complete as Regards the So-Called B and C Vitamin Contents Prevent This Toxic Effect? *ibid.* 7: 289, 1928; Zu Kenntnis der toxischen Nebenwirkung des Dorschlebertrans auf den Organismus, *Monatsschr. f. Kinderh.* 47: 97, 1930. Agduhr, E., and Stenroos, N.: The Appearance of the Electrocardiogram in Heart Lesions Produced by Cod Liver Oil Treatment, *Acta paediat.* 10: 167, 1931.

144. Norris, E. R., and Church, A. E.: The Toxic Effect of Fish Liver Oils and the Action of Vitamin B, *J. Biol. Chem.* 89: 437 (Nov.) 1930.

131. Shibley, G. S., and Spies, T. D.: The Effect of Vitamin A on the Common Cold, *J. A. M. A.* 103: 2021 (Dec. 29) 1934.

132. Wells, H. G., and Hedenburg, O. F.: The Toxicity of Carotin, *J. Biol. Chem.* 27: 213 (Oct.) 1916. Lewis, J. T., and Reti, L.: Sur l'hypervitaminose A et l'innocuité des fortes doses de provitamine A (Carotene cristallisé), *Compt. rend. Soc. de biol.* 118: 577, 1935.

133. Clausen, S. W., and McCoord, A. B.: Unpublished data.

134. von Drigalski, W.: Ueber Schädigungen durch Vitamin A, *Klin. Wehnschr.* 12: 308 (Feb. 25) 1933.

amount found in cod liver oil, but they failed to test their oil for the presence of this substance. Their view is not supported by the direct experiments of Bell, Gregory and Drummond,¹⁴⁵ who showed that a disturbance of growth in rats was produced by a diet containing 15 per cent of cod liver oil and could be made to disappear by an increase in the amount of vitamin B complex. The toxic substance in their cod liver oil could be extracted with hydrochloric acid but was not an amine. Turner, Meigs and Converse¹⁴⁶ stated that rabbits fed a grain mixture with low grade roughage have an even chance of surviving to an age of 180 days. If 0.7 Gm. of cod liver oil per kilogram is added, death will almost certainly occur between 90 and 150 days of age. If the roughage is of good quality alfalfa hay, little if any injury is produced by cod liver oil. On the other hand, calves receiving the grain mixture, poor quality roughage and skim milk do not survive unless cod liver oil (up to 0.7 Gm. per kilogram) is supplied but are injured by 2 Gm. per kilogram. Madsen and his co-workers¹⁴⁷ developed a synthetic diet containing cod liver oil but no hay or grain on which sheep and goats could be reared although the goats did not thrive. Rabbits and guinea pigs fed this diet did not survive. A constant symptom of failure to survive was paralysis due to degeneration of the skeletal muscles. The heart muscle was frequently involved. The substitution of a concentrate containing vitamins A and D for the cod liver oil delayed the onset and lessened the severity of the symptoms. The addition of cod liver oil (0.7 Gm. per kilogram daily) to a natural pasture diet caused death with the characteristic lesions in goats and sheep; but 0.1 Gm. of cod liver oil per kilogram daily caused no injury to animals on a normal diet. Cox and Roos¹⁴⁸ have repeated the experiments of Agduhr and Höjer. Although the rats in these experiments received doses of cod liver oil sixty times as large as the doses in Agduhr's experiments, Cox and Roos found no lesions in the heart. The whole question of degeneration of muscle and nervous tissue in animals consuming synthetic diets is at present the object of active study by several investigators. The questions of the presence of toxic substances and the absence of protective factors are involved. It appears at the present time that very little evidence exists that hypervitaminosis A is involved in the effect.

Occasional untoward effects have been ascribed to cod liver oil given to patients. Czerny¹⁴⁹ gave 80 cc. daily to tuberculous children and frequently observed the development of seborrheic dermatitis of the face and scalp. Sensitivity to cod liver oil, resulting in urticaria or eczema, has been reported in four patients by Balyeat and Bowen¹⁵⁰ and to halibut liver oil in two cases by Pfister.¹⁵¹

In view of the general favorable clinical experience with the use of cod liver oil, one would have to be very sure that the evidence for its harmful effect on human beings is strong enough to be accepted. The literature quoted in this section is so contradictory as to afford, at the present time, no adequate evidence.

Council on Pharmacy and Chemistry

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
PAUL NICHOLAS LEECH, Secretary.

ANNUAL MEETING OF THE COUNCIL ON PHARMACY AND CHEMISTRY

The Council on Pharmacy and Chemistry of the American Medical Association held its annual meeting at the Association headquarters, Friday and Saturday, March 18 and 19, 1938. Those present were Drs. David Barr, J. Howard Brown, S. W. Clausen, H. N. Cole, C. W. Edmunds, Morris Fishbein, E. M. K. Geiling, Ernest E. Irons, Paul Nicholas Leech, G. W. McCoy, E. M. Nelson, W. W. Palmer, William C. Rose and Torald Sollmann.

The following were present either for certain discussions or during the entire meeting: Dr. James S. McLester and Dr. George R. Cowgill of the Council on Foods; Dr. Austin Hayden, Secretary of the Board of Trustees; Dr. Olin West, Secretary and General Manager of the American Medical Association, and Dr. Harold Smith, Chairman of the Council on Dental Therapeutics of the American Dental Association.

Dr. Torald Sollmann was reelected chairman of the Council and Dr. W. W. Palmer was reelected vice chairman.

Among the many items discussed, the following may be of interest both to physicians and to manufacturers:

Status of Permissible Claims for Vitamins.—At the close of 1937 the Council revised the chapter in New and Nonofficial Remedies in reference to the status of permissible claims for accepted vitamin preparations. The general consensus of the Council was that there existed little need for a change in these claims but that it would be well to refer certain questions to the Cooperative Committee on Vitamins in view of recent developments in the literature. The committee was asked to report back to the Council in the near future.

Vitamin Mixtures.—The Council took cognizance of the increasing tendency on the part of pharmaceutical houses to promote mixtures of vitamins, particularly in tablet and capsule forms. The subject was referred to the Cooperative Committee on Vitamins for study and report.

Nomenclature of Vitamins.—The Council voted that New and Nonofficial Remedies 1939 be edited with a view to promoting the use of the scientific or chemical names for vitamins as promptly as possible. Eventually the name "vitamin" will be eliminated, but it will be used as a synonym during the transition period until the chemical names become fairly well established.

Advertising Claims for Vitamin Preparations.—Some recent actions of the Federal Trade Commission in the consideration of claims made for certain vitamin preparations were considered. The decisions discussed were in harmony with the views of the Council. The spirit of the Council's requirements should be enforced in passing on advertising. In other words, if a firm makes a claim that a vitamin will be of value in some phase of disease, the claim should be accompanied by a modifying clause to the effect that it applies only when there has been an exhaustion of body reserves of the vitamin and ingestion of the particular vitamin is inadequate; that is, vitamins are indicated when the condition is due to lack of vitamins themselves.

Possibility of Reducing Number of Types of Vitamin A and D Preparations.—The Council has adopted a decision limiting the dosage claims for vitamin preparations, which states that the daily dosage shall provide at least as much vitamin A and vitamin D as is contained in a teaspoonful of cod liver oil of

145. Bell, M. E.; Gregory, E., and Drummond, J. C.: Studies of the Alleged Toxic Action of Cod Liver Oil and Concentrates of Vitamin A. *Ztschr. f. Vitaminforsch.* 2: 161 (July) 1933.

146. Turner, W. A.; Meigs, E. B., and Converse, H. T.: Toxic Effect of Cod Liver Oil in the Ration of the Rabbit and the Calf. *J. Biol. Chem. (Proc. Am. Soc. Biol. Chem.)* 114: civ (May) 1936.

147. Madsen, L. L.; McCay, C. M., and Maynard, L. A.: Possible Relationship Between Cod Liver Oil and Muscular Degeneration of Herbivora Fed Synthetic Diets. *Proc. Soc. Exper. Biol. & Med.* 30: 1434 (June) 1933. Madsen, L. L.; McCay, C. M.; Maynard, L. A.; Davis, G. K., and Woodward, J. C.: Synthetic Diets for Herbivora, with Special Reference to the Toxicity of Cod Liver Oil. *Mem. 178, Cornell Univ. Agric. Exper. Sta.* June 1935, p. 63.

148. Cox, W. M., Jr., and Roos, A. J.: On the Alleged Toxicity of Cod Liver Oil. *Bull. Johns Hopkins Hosp.* 54: 430 (June) 1934.

149. Czerny, A.: Beitrag zur Lebertrantherapie. *Therap. d. Gegenw.* 14: 49 (Feb.) 1912.

150. Balyeat, R. M., and Bowen, R.: Cod Liver Oil Sensitivity in Children. *Am. J. Dis. Child.* 47: 529 (March) 1934.

151. Pfister, F. F.: A Skin Manifestation from the Excessive Administration of Vitamins. *J. A. M. A.* 102: 533 (Feb. 17) 1934.

minimum strength, and not more than 1,000 units of vitamin D and 10,000 units of vitamin A. In applying this decision to vitamin A and D preparations, it becomes obvious that there are more classes of vitamin A and D preparations than are really necessary and the multiplicity of dosage forms also imposes an undue burden on the physician. One of the Council's referees pointed out that the number of vitamin A and D preparations should be limited by restricting the number of concentrations in each form to be recognized by the Council. The Council voted that this matter be referred to the Cooperative Committee on Vitamins for consideration and report.

Vitamin E.—Recently the use of vitamin E in the form of wheat germ oil has been suggested for the treatment of habitual abortion in women. One of the referees reviewed for the Council in detail the available evidence. It was pointed out that evidence for the effectiveness of this treatment is meager and that it is the practically unanimous opinion of nutritionists that vitamin E is widely distributed in foods and that there is no reason normally to suspect a deficiency. In most cases the amount of wheat germ oil that would be administered would be but a small fraction of the vitamin E which would be consumed in the ordinary diet. The Council referred the referee's report to the Cooperative Committee on Vitamins with the request that it be published after consideration by the committee.

Advertising Brochures.—In the printed abstract of the minutes of the Council for 1937 (*THE JOURNAL*, May 29, 1937, p. 1887) appeared the following paragraph:

Brochures Issued by Pharmaceutical Houses.—There has recently been a tendency on the part of certain pharmaceutical firms to issue brochures advising the profession on the status of certain diseases and making recommendation for therapeutic treatment. In such brochures a certain drug is extolled, frequently to the exclusion of other therapeutic measures. The members of the Council felt that comprehensive reviews of medicine, surgery or the specialties are the function of duly qualified persons who undertake the task from altruistic motives rather than for the purpose of advocating the sale and use of particular commercial products. The members of the Council recognize the usefulness of educational brochures when prepared under proper auspices and with proper restrictions.

The general opinion of the Council was in confirmation of the foregoing statement. Members of the Council felt that teaching should be done by those persons especially qualified to do the work of teaching and that brochures are generally edited with the view of increasing the sale of the product. Therefore, the contents of brochures are frequently found to be definitely biased. The Council decided to prepare, with the aid of the editor of *THE JOURNAL*, a report dealing with this subject.

Liver Preparations.—It was announced that a number of commercial liver preparations have been considered by the U. S. P. Anti-Anemia Preparations Advisory Board for approval. The standards of this board and those of the Council are not the same. It was brought out that the U. S. P. Advisory Board has not published its standards. Furthermore, Council-accepted products must comply with other rules of the Council besides those dealing simply with potency. It was thought that the U. S. P. committee would probably publish its standards in the near future. A motion was adopted to the effect that the Council consider it highly desirable that both the U. S. P. Anti-Anemia Preparations Advisory Board and the Council on Pharmacy and Chemistry should arrive at common standards for liver preparations, with a view to their adoption and inclusion in New and Nonofficial Remedies.

Ergonovine.—In 1937 Eli Lilly and Company submitted to the Council a detailed and documented brief to substantiate the claim that the Council should recognize its proprietary name for the substance for which the Council had coined the nonproprietary name Ergonovine. This claim was made on the basis of the patent as evidence of prior discovery of the alkaloid. After careful consideration it was voted that the Council, so far as its rules are concerned, does not concur in the contention that Eli Lilly and Company has such prior right, either for Ergonovine or for its salts. [The Council does believe, however, that by virtue of its patent Eli Lilly and Company has a prior right to a proprietary name for a mixture of ergot alkaloids, such as is defined in the patents.]

The Pharmacopoeial Convention in 1940.—There was general discussion of the pharmacopoeial convention to be called for 1940, and a desire expressed that the objectionable features

of the convention of 1930 as it affected the medical profession should not be repeated. The Council voted to inform the Board of Trustees of the American Medical Association of its consideration of the 1940 convention of the U. S. Pharmacopeia with the suggestion that the medical profession do its utmost to insure adequate medical representation.

Status of Insulin and Insulin Preparations.—The Council considered the status of crystalline zinc insulin. The opinion was that the product zinc insulin crystals should be accepted for inclusion in New and Nonofficial Remedies, with the condition that acceptance of otherwise acceptable brands will not become official until the product is sold on the open market.

Aminophylline.—The Council published a statement on aminophylline (*THE JOURNAL*, June 26, 1937, p. 2203) restricting the recognizable claims for accepted products to their use as a diuretic and mild myocardial stimulant. In view of the evidence available at that time the Council reported that it could not recognize claims which would infer usefulness in overcoming the pain of angina pectoris. One of the manufacturers referred to some evidence published at about the time the Council issued its last report. The Council considered this paper but decided that for the present no alteration should be made in the decision on permissible claims for this drug. The Council, however, will scrutinize carefully any further evidence that may be published in the scientific literature to determine whether or not the permissible claims for aminophylline may be modified.

Barbituric Acid and Its Derivatives.—The Board of Trustees has requested the Council to issue a report on barbituric acid and its derivatives in view of the widespread abuses of these drugs. The Council decided to secure the cooperation of certain individuals to aid in the preparation of a report relative to the dangers of barbituric acid and its derivatives.

Antiseptics and Germicides.—The Council authorized a study and report which may aid in determining present-day scientific interpretation of such terms as "antiseptic," "germicide," "bactericide," "fungicide," "disinfectant."

Generic Names.—In view of the recent cellophane decision the Council is of the opinion that it is correct in coining new brief, usable, nonproprietary, generic names for products protected by patents, so that when a patent expires there will already be available and in use a suitable nonproprietary name. The Council was informed at that time, however, that the cellophane decision had not yet gone before the highest court.

Acquisition of Pharmaceutical Houses by Nostrum ("Patent Medicine") Interests.—For a number of years there have been holding concerns or groups of individuals who have had financial interest or control, or both, in patent medicine concerns and ethical proprietary houses. Of late there has been a further tendency of nostrum ("patent medicine") houses to purchase, or obtain financial control of, concerns which make products for the physician. The Council decided that it should be very watchful of companies acquired by nostrum interests or closely associated financially with nostrum interests. In those instances in which the Council has information that the best interests of either the public or the medical profession are being jeopardized by a house under such control and having Council accepted products, immediate action will be taken against the firms, particularly in relation to the application of rule 11. It was recommended that this action should be included in the published minutes of the Council, and that this would constitute a general notification to the pharmaceutical industry of the Council's policy.

Series of Articles on Glandular Therapy.—The book "Glandular Physiology and Therapy," which contained the series of articles published approximately two years ago, has been a success. Since the book was issued additional work has been done indicating that new chapters are needed and some now in the book should be modified or omitted. The Council decided to sponsor another series of articles on this subject with a view to publication some time in 1939.

Therapeutic Research.—The report of the Committee on Therapeutic Research was discussed in detail; the complete report will be found under Reports of Officers (*THE JOURNAL*, April 30, 1938, p. 1484).

Comparative Safety of Anesthetics.—The Council directed that a communication be sent to the Council on Scientific Assembly pointing out the desirability of keeping the subject of reports on the comparative safety of anesthetics actively before the clinical sections and emphasizing that the Council is desirous of receiving any reports of accidents following the use of anesthetics.

Drug Store Window Display Advertising.—The Council voted that pharmaceutical firms again be informed that window display advertising arranged by the manufacturers comes within the category of the Council's rules dealing with advertising; that manufacturers of Council accepted products must abide by the Council's rule of not using an accepted preparation, or preparations, to advertise a nonaccepted preparation, or preparations, and that the manufacturers will be held responsible when such conflicts come to the attention of the Council.

Council on Foods

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
FRANKLIN C. BING, Secretary.

ANNUAL MEETING OF THE COUNCIL ON FOODS

The Council on Foods held its annual meeting at the Association headquarters on March 17, 1938. Dr. Bailey, who has served on the Council since its inception, was unable to attend because of illness. The following members were present: Drs. F. C. Bing, Joseph Brennemann, Morris Fishbein, George Cowgill, P. C. Jeans, Howard B. Lewis, J. S. McLester, Lydia J. Roberts, Mary Swartz Rose and Russell M. Wilder. Others present included Dr. Olin West, Secretary and General Manager of the American Medical Association; Dr. E. M. Nelson, Chief of the Vitamin Division, Food and Drug Administration; Dr. W. C. Woodward, Director of the Bureau of Legal Medicine; Dr. Paul Nicholas Leech, Director of the Division of Drugs, Foods and Physical Therapy, and Drs. Ruth Cowan Clouse and Majorie Pickens of the Council office.

Dr. Fishbein was reelected Chairman and Dr. Lewis was elected Vice Chairman.

The present work and future developments of the Council on Foods were discussed at some length. It has been found necessary in the last two years to limit somewhat the scope of products to be considered, because of the vast number of submissions and the limitation in facilities. As a result, several of the "natural foods" have been placed on the exempted list. The advisability of continuing consideration of sugars and homogenized milks was discussed and it was decided that, in view of the apparent necessity to moderate some of the claims which are being made for these foods, it would be well to retain them on the list of products considered and to "accept" those products which comply with the Rules and Decisions of the Council.

Ice creams, sherbets and ices were placed on the "exempted" list approximately a year and a half ago. One result of this action has been the formation of an Association of Quality Ice Cream Producers, which has established high sanitary and advertising standards for its members. The Council looks favorably on the general policy of this type of organization, and while it will not be possible to grant the use of the seal to appear on the cartons and in the advertising for the products of the member firms, as requested by the association, the Council voted to allow the members to incorporate on their cartons and in other advertising a uniform statement (without the seal) that the method of manufacture and the advertising claims are acceptable to the Council on Foods (after the Council has considered them).

A progress report on the series of articles on vitamins which is appearing currently in THE JOURNAL under joint sponsorship with the Council on Pharmacy and Chemistry was given. This series will consist of more than thirty articles and will be made

available in book form as soon as all of the reviews have appeared. Opportunity will be afforded authors to bring their bibliographies up to date before the book is published.

Work on the book Accepted Foods has been progressing and it is planned to publish this volume soon.

The following additional topics which were discussed during the meeting may be of interest to physicians, manufacturers and the general public:

Vitamin D Requirements of Babies Born Prematurely.—Consideration was given to the claim made by manufacturers of infant feeding preparations containing vitamin D that the use of some of them will prevent rickets in babies born prematurely. The referee, in discussing this question, observed that rickets in premature infants is not prevented by an amount of vitamin D which is less than that required for full term infants. After the first few weeks of life the requirement of the premature infant should approach that of the full term infant. The vitamin D requirement of the prematurely born infant is not easily determined because of the difficulty of supplying ample amounts of calcium and phosphorus during the first few weeks of extra-uterine life. It is well known that it is difficult for a premature baby to ingest sufficient calcium to permit adequate retention. There is evidence that prevention of rickets in premature infants may be accomplished by administering about 70 U. S. P. units of vitamin D per kilogram of body weight. For adequate retention of calcium and phosphorus more vitamin D may be necessary. From evidence available it can be concluded that the vitamin D requirements of prematurely born infants are satisfied by from 600 to 800 U. S. P. units of vitamin D fed in dispersed form, which is approximately twice the requirement (for prevention of rickets and for growth) of the majority of full term infants. Thus, the claim that a preparation which provides approximately 70 U. S. P. units of vitamin D per kilogram is antirachitic for premature babies is acceptable, although physicians should realize that, in the light of present knowledge, somewhat more vitamin D may be desirable for adequate retention of calcium.

Vitamin D and Growth.—In its study of the vitamin D requirements of infants, the Council distinguished between the amount of vitamin D necessary to prevent rickets and the greater amount which is necessary in order to permit optimal retention of calcium and phosphorus. As far as normal, full term infants are concerned, milk containing 135 U. S. P. units per quart usually will prevent rickets. Milk containing 400 U. S. P. units of vitamin D per quart obviously supplies somewhat more than the amount which usually is required to prevent rickets. The question has been raised whether or not vitamin D milk containing 400 U. S. P. units of vitamin D per quart permits good growth. It has long been known that vitamin D is a growth factor, like many other dietary essentials. There is evidence also that infants receiving customary quantities of milk which contains 400 U. S. P. units of vitamin D per quart exhibit good growth. The Council voted that this claim be recognized.

The Nutritional Significance of Foods (Other Than Milk) Commonly Fed During the First Year of Life.—Manufacturers of cereal products commonly used in infant feeding have advanced the claim that their respective products are baby's "first solid food." This statement is a relatively harmless bit of advertising puffery, but it is not entirely correct. Milk is a "solid" food just as much as any cereal product. The chief objection to the phrase, however, is the reference to any particular product as the "first" of the foods other than milk (and carbohydrate supplements). The referee discussed the general problem of infant feeding and the necessity of supplying the infant with suitable amounts of vitamins A, B₁, C and D and with iron and the other substances which foods supply. The place of orange juice, cod liver oil, cereals, vegetables, fruits and egg yolk in the diet of the infant was discussed.

A report on this topic will be prepared for publication. The Council voted, on the basis of evidence presented, that manufacturers of ordinary cereal products be requested to modify their claims to indicate that cereal preparations are "among baby's first solid foods" or that an individual product is "one of baby's first solid foods."

Caffeine and Theobromine in Foods.—The question of whether or not beverages containing caffeine and theobromine may be used by children is a perennial one. Unfortunately, it does not seem possible to specify a maximum amount of caffeine and theobromine which may be present in a product recommended for children. The habits and customs of different people vary greatly and the problem is complex. It is generally recognized that unrestricted quantities of tea, coffee and other purine containing beverages are not desirable for children. It is likewise generally recognized that a child should drink milk. Because a child will take only a limited amount of fluid material in a day, it is important that coffee, tea and other purine containing beverages do not replace milk.

The Problem of Lead in Foods.—The Council has sponsored some investigations on the lead problem during the last year and it is planned to continue these studies and to publish reports from time to time on the status of knowledge of this question.

Emulsifying Agents in Foods.—Certain foods, processed cheese and oleomargarine in particular, contain emulsifying agents. Formerly these emulsifying agents consisted of inorganic phosphates, lecithin and other well known substances. More recently a synthetic product known as monostearyl sodium sulfoacetate and frequently described as a "derivative of glycerin" has been much used. Reports of experiments indicate that this derivative of glycerin should be digested to glycerin, stearic acid and sodium sulfoacetate, the first two of which are harmless and the third of which appears to be excreted unchanged. It is considered improbable that sodium sulfoacetate in quantities likely to be ingested would have any toxic effect, either acute or cumulative, though no direct experiments concerned with either the digestion or fate in metabolism of the "derivative of glycerin" are available. The Council voted to prepare a report providing information concerning the newer emulsifying agents with a view to publication and later incorporation in the book *Accepted Foods*. The Council regards the name "derivative of glycerin" as nonspecific, indefinite and somewhat misleading because it includes all fats and lecithin. The more definite chemical name sodium monostearosulfoacetate will henceforth be used by the Council in the enumeration of ingredients of oleomargarins.

Conversion Factors for Changing Sherman Units of Vitamin A into International Units, and Problems Relating Thereto.—Data regarding the vitamin A content of most food products have been reported in terms of Sherman units. These units depend on the growth response of experimental animals which is subject to variation in different laboratories and at different times in the same laboratory. The Sherman unit therefore has no fixed value. It is now generally considered that the estimation of vitamin A in terms of international (or U. S. P. units) provides a means of compensating for a number of the variables inherent in the older method. According to the international system, the unit amount of vitamin A is defined as that which is contained in a definite amount of standard substance. The vitamin A content of a food product is determined by comparing the growth response of animals receiving a substance tested with the growth response of animals simultaneously fed the standard reference material. Thus, variations in growth due to unsuspected variations in composition of diets and other factors cancel out and the international unit becomes a relatively fixed value.

In 1933 the U. S. P. Vitamin Advisory Board reported that, on the basis of evidence then available, 1 Sherman unit appeared to be equal to about 1.4 international units. This was not an official factor but was widely adopted at that time for the conversion of Sherman to international units both in the drug and food fields. From evidence which has later accumulated in various laboratories, it now appears that 1 Sherman unit may be equal to from 1.4 international units to 0.5 international unit. A factor for the conversion of one unit into another is not necessary at the present time for pharmaceutical products, because there are relatively few of these and the potency can be determined by the U. S. P. method. In calculations for nutritional purposes, however, it will be necessary for some time to come to convert one unit into another. It is not possible, and because of the nature of the problem it will not be

possible, to select a single factor which is entirely satisfactory. It is the consensus of the Council, after reviewing available data, that the most probable relationship is 1 Sherman unit equals from about 0.66 to 0.80 international unit. A more detailed report is being prepared for publication. It will suffice here to give but one example of the importance of reviewing the evidence on this topic. As a standard allowance for the vitamin A requirements of an adult, various authorities have, in the past, suggested about 3,000 Sherman units. The question then arises: How many international units is this amount of vitamin A equivalent to? Because of the variability of the factors reported, this would be from 1,500 to 4,200 international units of vitamin A. The higher value, 4,200 international units, would be preferable as a standard dietary allowance but it would be well to know how liberal this amount actually is.

The Iodine Content of Iodized Salt.—In its General Decision "Iodized Salt, and Goiter an Iodine Deficiency Disease," the Council stated, "An accepted iodized salt shall contain one part sodium or potassium iodide per 5,000 parts salt (approximately 160 parts iodine per million parts salt), or iodine equivalent of any other suitable iodine compound." Latterly the opinion has been expressed by some investigators that the amount of iodine in iodized salt could well be decreased. The value of iodized salt (as defined by the Council) in the prevention of simple goiter has been demonstrated. It also is known that the ingestion of additional iodides by some persons, those with adenomatous goiter, for example, is harmful, but in reviewing available evidence there is no report that harm has come from the use of iodized salt. The Council decided, therefore, that for the present the amount of iodine in accepted brands of iodized salt should be continued at one part of sodium or potassium iodide to 5,000 parts of salt. It is planned also to prepare and publish a report on iodized salt in which these questions are discussed at greater length. The Council emphasizes that persons over 30 years of age with any swelling of the throat should not use iodized salt unless they do so under the directions of a competent physician.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

MIAMI VALLEY, DA LEE, SPRING FARM, PITCHERS BEST, AND SHADY NOOK BRANDS EVAPORATED MILK

Manufacturer.—Westerville Creamery Company, Covington, Ohio.

Description.—Canned, unsweetened evaporated milk.

Manufacture.—The raw milk is inspected, tested for butter-fat content, preheated, evaporated under vacuum, homogenized, cooled, and standardized for fat and total solids content. The evaporated milk is automatically filled into cans; the cans are sealed and heat processed.

Analysis (submitted by manufacturer).—Moisture 73.9%, total solids 26.1%, ash 1.3%, fat (ether extract) 7.8%, protein (N \times 6.38) 6.8%, lactose (by difference) 10.2%.

Calories.—1.4 per gram; 40 per ounce.

MRS. PALEY'S BABY FOOD—STRAINED PEAS

Manufacturer.—Paley-Sachs Food Company, Houston, Texas.

Description.—Canned, sieved peas, slightly seasoned with salt.

Manufacture.—Selected canned peas are sieved, filled into glass jars, vacuum sealed and heat processed.

Analysis (submitted by manufacturer).—Moisture 84.1%, total solids 15.9%, ash 1.2%, fat (ether extract) 0.3%, protein (N \times 6.25) 4.7%, reducing sugars as dextrose—trace, sucrose 2.9%, crude fiber 0.6%, total carbohydrates other than crude fiber (by difference) 9.1%, calcium (Ca) 0.015%, phosphorus (P) 0.059%, iron (Fe) 0.001%.

Calories.—0.6 per gram; 17 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET : : : CHICAGO, ILL.

Cable Address : : : "Medic, Chicago"

Subscription price : : : : Seven dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, JULY 9, 1938

THE ROENTGENOLOGIST, THE PATHOLOGIST AND THE ANESTHETIST UNDER HOSPITAL INSURANCE PLANS

One of the most significant actions taken by the House of Delegates in San Francisco concerned the relationship of three professional groups—roentgenologists, pathologists, anesthetists—to various hospital insurance plans. Several resolutions which were offered from various sections of the country were considered by the Council on Medical Education and Hospitals. The Council in its report said:

The proposers of these resolutions, the delegates from the Massachusetts Medical Society, members of the California Medical Association and others met with the Council to express their views concerning the problems that concern the practice of medicine in hospitals by radiologists, pathologists and anesthetists. These problems have been rendered more acute by the rapid extension of systems of group hospital insurance within the last few years. The Council believes that these problems are of vital concern to the medical profession; that unwise decisions at this time may lead to consequences that would be disastrous to physicians and to the public alike, and that, therefore, a serious study should be made of existing relationships between hospitals and the physicians practicing therein, especially in the departments of anesthesia, radiology, pathology and physical therapy, with a view to standardizing the relationship of these services to the hospital and, where necessary, of reaffirming the principles of ethics involved.

The Council recommends that it, jointly with the Bureau of Medical Economics, be authorized to undertake these studies and to confer with other interested agencies, in order that it may be in a position to establish ethical standards for the practice of medicine by physicians holding positions in hospitals and to prevent the exploitation of either the public or the profession. If during this study it is revealed that hospitals registered and approved by the Council are exploiting the public or the profession, such approval may be revoked.

This report of the Council on Medical Education and Hospitals was adopted by the House of Delegates of the American Medical Association. Therefore, during the coming year a suitable study will be made and recommendations no doubt will be drawn up for submission to the House of Delegates at the next annual session.

Until new recommendations are made and until the House of Delegates has adopted them, the policy of the Association in relationship to these matters remains

unchanged. Should there be doubt as to the policy of the American Medical Association in this connection it is well to remember the action taken by the House of Delegates at San Francisco, which reads:

Since . . . some state and county medical societies may find it necessary to develop preferable procedures for supplying the needs where medical services are insufficient or unavailable, it is urged that these medical societies be guided in the development of these procedures by the ten principles adopted by the House of Delegates in 1934. The application of these ten principles to specific suggestions or proposals for the organization of medical services may be facilitated by utilizing the method of direct cash payments to individual members. Your committee unanimously concurs in the suggestion and recommends that the American Medical Association adopt the principle that in any place or arrangement for the provision of medical services the benefits shall be paid in cash directly to the individual member. Thus, the direct control of medical services may be avoided. Cash benefits only will not disturb or alter the relations of patients, physicians and hospitals.

Your committee has considered in detail that portion of the report of the Board of Trustees devoted to the Bureau of Medical Economics under the heading "Group Hospitalization" and also the separate statement of the Bureau of Medical Economics entitled "Group Hospitalization Insurance." Your committee commends the clarity and forcefulness of these statements and recommends that the ten principles adopted in 1934 as the policy of the American Medical Association be amplified by the addition of the following statement to Principle 4:

If for any reason it is found desirable or necessary to include special medical services such as anesthesia, radiology, pathology or medical services provided by outpatient departments, these services may be included only on the condition that specified cash payments be made by the hospitalization organization directly to the subscribers for the cost of the services.

Disapproval of the inclusion of special medical services on a service basis in hospitalization insurance contracts will then be explicit but a constructive alternative arrangement will be possible.

These actions should make clear the point of view of the American Medical Association in this regard.

Recent apparently inspired news items have asserted that "the American Medical Association and various groups within the profession oppose the hospital insurance system which protects 1,600,000 Americans." The American Medical Association has never opposed hospital insurance; several of its constituent medical societies have been responsible for the development of hospital insurance plans. The plans prevailing in Washington, D. C., St. Louis, Oakland, Calif., and the statewide plans in Alabama and North Carolina were inaugurated by medical societies. In many other localities, medical societies are participating in the operation of hospital insurance plans.

The medical profession is certainly opposed to those undesirable types of hospital insurance plans which violate state insurance laws or state laws governing medical practice, and to those plans promoted for individual gain. Most of the plans which violated state insurance laws or which were operated for personal gain have been discontinued or reorganized. However, many hospital service plans continue to ignore state medical practice acts which require persons to possess certain educational requirements and pass an examination before they can offer to diagnose illnesses or treat the sick. Hospitals and hospital insurance corporations

cannot fulfil these requirements. In most states the courts have therefore recognized that it is contrary to good public policy for a corporation to attempt to practice medicine by hiring physicians to practice medicine for the corporation. Physicians have always objected to those arrangements whereby a corporation (and most hospitals are corporations) attempts to sell the services of roentgenologists, pathologists and anesthetists in a manner which results in a profit for the corporation or places the directors of the corporation in control of the personal relations between the patient and his physician. Similar undesirable relations are created when a corporation attempts to practice any profession. Consequently, the courts have also recognized that a corporation cannot practice law or hire lawyers to practice law for it. The same holds true for dentistry. These principles are maintained to give the individual person reasonable assurance that he will receive competent services from physicians, lawyers and dentists.

The action taken by the House of Delegates in San Francisco holds that it is desirable to permit each person to receive the benefits from a hospital insurance system in cash so that he may purchase his own medical services from whatever source he may desire. When the individual himself pays for the services he receives he can be assured of adequate and satisfactory services; otherwise he can refuse to make the payment. Under the cash-to-the-insured payment arrangement, which is the long-established method used by accident and health insurance companies, the insured person receives a definite number of dollars with which he can purchase services that are satisfactory to him. He does not have to accept whatever services may be offered by the insuring organization. The rights of the patient certainly are superior to those of the hospital, the corporation or any other interest.

ACTIVE IMMUNIZATION AGAINST TETANUS

The prophylactic use of tetanus antitoxin in the production of passive immunity, while valuable, has presented certain disadvantages which have led to continued efforts to produce active and more permanent protection. The initial difficulty in the immunization of man against tetanus, according to Boyd,¹ lies in the lack of a suitable immunizing agent. Most of the recent work has been carried out with altered toxin termed anatoxin by Ramon but now more commonly known as toxoid. In spite of the many efforts in this direction, however, there is at present no fixed standard for tetanus toxoid except that adopted in France. The dose has varied but inoculation by the subcutaneous route has proved reasonably satisfactory. The duration of active immunity conferred by inoculation with toxoid has been so closely connected with preparation of the

material, the size and frequency of the injection and other factors as to have varied widely in the hands of different investigators. From the Royal Army Medical College, Boyd reports direct experiences in immunization against tetanus. The first product used was tetanus toxoid-antitoxin floccules prepared along the same lines as diphtheria toxoid-antitoxin floccules. In the small group of volunteers treated the antitoxin production was negligible and in two months only a faint trace was found in four of the seven. Nine months after inoculation with the floccules, three of the volunteers were given a dose of 1 cc. of formol-toxoid. Two of these subjects tested after a month showed no less than two units of antitoxin per cubic centimeter of serum, while the third, not tested until fifty-six days after reinoculation, showed at that time between ten and twenty units. It seemed therefore that inoculation with floccules establishes a basal immunity, even though it fails to produce antitoxin in the serum.

Another group of thirteen volunteers was given a preliminary dose of 1 cc. of tetanus toxoid (formol-toxoid). From twenty-one to twenty-six days later, five were given a second dose of 1 cc. and a month thereafter samples of blood were tested for antitoxin. The titers at this time varied from 0.005 to 0.02 unit of antitoxin per cubic centimeter of serum, a concentration which cannot be regarded as adequate. The remaining eight men were given a second dose from six to seven weeks after the first and tested four weeks later with more satisfactory results. A further group was therefore treated similarly, and figures ultimately were available on thirty treated in this manner. The titer was between 0.01 and 0.1 unit of antitoxin per cubic centimeter of serum in three, from 0.1 to 1 unit in twenty-one, and 1 unit and over in six. These results are certainly much better than those obtained when the two doses were given at an interval of three weeks, and the average is far above the level believed to confer a protection against tetanus. The antitoxin titers compare favorably in fact with those from Ramon's three dose method and also from inoculation with two doses of alum precipitated toxoid, except when the latter are administered at wide intervals. Recommendations have accordingly been made to introduce this measure on a voluntary basis into the British army. The more extensive experience which will be thus obtained will doubtless provide valuable evidence of this particular procedure of active immunization.

In another interesting investigation of the subject recently published, Gold² administered two 0.5 cc. doses of tetanus toxoid alum precipitated, given 645 days apart to fifty adult workers. The later titration of the antitoxin titer of the serum from eleven members of this group showed considerable individual variability in the amount of antitoxin produced and lost in the course of active immunization. Similar results were obtained

1. Boyd, J. S. K.: Active Immunization Against Tetanus, *J. Roy. Army Med. Corps* 70:289 (May) 1938.

2. Gold, Herman: Active Immunization Against Tetanus By Means of Tetanus Toxoid Alum-Precipitated Refined, *J. Lab. & Clin. Med.* 23: 903 (June) 1938.

with other groups given the toxoid at different intervals and tested after different periods. It could be concluded nevertheless, this author believed, that a protective antitoxin titer of one unit or more develops in from five to fourteen days after an injection of a second dose of alum toxoid, even when the latter is given two years after the first dose. The duration of the protective level varies, however, and may disappear within ninety days or may last over two years. The antitoxin titer can be raised to a protective level by a further injection of alum toxoid. The most important question requiring further investigation, he concluded, is the determination of the actual amount of antitoxin necessary to protect against tetanus. Furthermore, if an infection occurs during an interval before the basic course of immunization is completed or within a few days after the second injection of alum toxoid when the antitoxin level of the blood has not yet reached 0.1 unit, it may be necessary to resort to passive immunization in order to insure full protection against tetanus. These are fundamental investigations. The attempt to produce active immunization to tetanus is of significant and practical importance, and the possible development of war injuries on a large scale lends an increasing importance to the prophylactic effort.

Current Comment

AWARD TO AMERICAN MEDICAL ASSOCIATION RADIO PROGRAM

The National Broadcasting Company has just issued a folder entitled NBC . . . Cum Laude, in which are listed awards to noteworthy radio programs broadcast over the National Broadcasting Company networks. The Institute for Education by Radio, at the ninth annual conference at Columbus, Ohio, heard transcriptions of more than 200 entries and made the following first awards to programs broadcast over the coast to coast networks of the National Broadcasting Company: Science in the News, produced by the University Broadcasting Council; The Story Behind the Headlines, by the American Historical Association; The NBC Home Symphony; Town Meeting of the Air, by Town Hall Inc., and Your Health, by the American Medical Association. Honorable mention was awarded to the University of Chicago Round Table and The World Is Yours (the Story of Electricity), produced by the U. S. Office of Education. All these programs were produced over networks of the National Broadcasting Company and with the cooperation of the educational divisions of that company. The inclusion of the educational radio program of the American Medical Association in an honor group selected by educational and radio experts is gratifying. This program has been broadcast for three seasons in dramatized form, and active plans are under way for a new series for the fall, winter and spring of 1938-1939. The principal need of this program now is a broader audience and

more local outlets. County medical societies and auxiliaries have an opportunity to call the attention of this award of merit to the managers of local stations and to make efforts to interest such managers in the Your Health program as an exceptional sustaining educational feature for 1938-1939. A sustaining program as distinguished from a commercial program is one from which the networks and the local stations derive no revenue but which they contribute as a part of their function in broadcasting "for the public interest, convenience and necessity." The National Broadcasting Company cannot assure the broadcasting of network programs over stations not owned by the company, even though such stations have NBC network affiliations. The local outlets must be procured largely on the basis of local effort, through which local interest in the program can be developed. All principals of high schools and junior high schools should be given full information about the program. Informative folders prepared by the Bureau of Health Education will soon be available and will be sent gratis in quantities which can be put to good local use, on request.

TUBERCULOSIS STUDIES IN TENNESSEE

Today, with diminishing mortality from pulmonary tuberculosis, intensified emphasis is placed on early diagnosis. An example of the importance attached to early diagnosis is manifest in the study by Stewart and his collaborators¹ on tuberculous infection, morbidity and mortality in 468 households in Williamson County, Tenn. In addition to the individuals through whom attention was drawn to the family, 3,169 household contacts were examined by detailed history, physical examination, roentgen study and the tuberculin test. Of the household contacts under 15 years of age, a positive reaction to tuberculin was observed in a definitely higher proportion of those exposed to patients with positive sputum than in those exposed to other types or stages of tuberculosis. Except in the case of exposure to open tuberculosis, in fact, the positive reactions to tuberculin in the age groups from 5 to 14 were approximately the same as in the general school population. Evidence of infection as shown by roentgen examination was higher in those exposed to sputum positive patients before middle age than in later years. The possibilities of death from tuberculosis were considerably greater for the contacts of sputum positive patients than for the white population of Tennessee as a whole. Furthermore, the excess risk was concentrated in the younger age groups. The development of manifest tuberculosis and death from tuberculosis were both twice as frequent for those exposed to sputum positive patients as for those exposed to patients with manifest tuberculosis without positive sputum. Finally, it was found that the annual tuberculosis attack rate for the household contacts in the ten year period following exposure to open tuberculosis was slightly greater than 1 per cent a year—a rate approximately the same as noted in Philadelphia and in Cattaraugus County, N. Y.

1. Stewart, H. C.; Gass, R. S.; Gauld, R. L., and Puffer, Ruth E.: Tuberculosis Studies in Tennessee, *Am. J. Hyg.* 26: 527 (Nov.) 1937.

ORGANIZATION SECTION

PROCEEDINGS OF THE SAN FRANCISCO SESSION

MINUTES OF THE EIGHTY-NINTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, HELD AT SAN FRANCISCO, JUNE 13-17, 1938

(Concluded from page 64)

MINUTES OF THE SECTIONS

SECTION ON PRACTICE OF MEDICINE

WEDNESDAY, JUNE 15—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr. Francis G. Blake, New Haven, Conn.

In the absence of the secretary, Dr. Fred M. Smith, Iowa City, Dr. Gordon E. Hein, San Francisco, acted as secretary.

Dr. George E. Fahr, Minneapolis, read a paper on "The Treatment of Cardiac Irregularities." Discussed by Drs. William J. Kerr, San Francisco; Horace M. Korn, Iowa City; S. A. Weisman, Minneapolis; Wilhelm Dressler, Vienna (Berkeley, Calif.), and George E. Fahr, Minneapolis.

Drs. Donald E. Griggs, Charles B. Coggin and Newton G. Evans, Los Angeles, presented a paper on "Right Ventricular Hypertrophy and Congestive Failure in Chronic Pulmonary Disease." Discussed by Drs. John J. Sampson, San Francisco, and Donald E. Griggs, Los Angeles.

Dr. Walter L. Biering, Des Moines, Iowa, delivered the Frank Billings Lecture entitled "Focal Infection—A Quarter Century Survey."

Dr. M. A. Blankenhorn, Cincinnati, read a paper on "The Present Status of the Serum Therapy of Lobar Pneumonia."

THURSDAY, JUNE 16—AFTERNOON

Dr. Albert H. Rove, Oakland, Calif., read a paper on "Bronchial Asthma: Its Diagnosis and Treatment." Discussed by Drs. Charles H. Eyermann, St. Louis; George Piness, Los Angeles; John Francis Quinlan, San Francisco; Julian Cohn, Los Angeles, and Albert H. Rowe, Oakland, Calif.

Dr. Francis G. Blake, New Haven, Conn., read the chairman's address, entitled "A Further Evaluation of Artificial Pneumothorax in Lobar Pneumonia."

Drs. Martin H. Dawson and Ralph H. Boots, New York, presented a paper on "The Treatment of Rheumatoid Arthritis." Discussed by Drs. Ernest E. Irons, Chicago, and Russell L. Haden, Cleveland.

Dr. Bayard T. Horton, Rochester, Minn., read a paper on "The Outlook in Thrombo-Angiitis Obliterans." Discussed by Drs. F. E. Bollaert, East Moline, Ill., and Bayard T. Horton, Rochester, Minn.

Dr. Roy W. Scott, Cleveland, read a paper on "Hypertension: A Century After Bright." Discussed by Drs. T. H. Coffen, Portland, Ore.; Frank R. Nuzum, Santa Barbara, Calif., and Roy W. Scott, Cleveland.

Dr. Karl A. Menninger, Topeka, Kan., read a paper on "The Psychologic Factor in Disease." Discussed by Drs. Edgar V. Allen, Rochester, Minn.; Dwight L. Wilbur, San Francisco, and Karl A. Menninger, Topeka.

FRIDAY, JUNE 17—AFTERNOON

The following officers were elected: chairman, Dr. N. C. Gilbert, Chicago; vice chairman, Dr. L. H. Briggs, San Francisco; member of the American Board of Internal Medicine, Dr. Ernest E. Irons, Chicago.

Acting Secretary Hein read a note addressed to Dr. Fred M. Smith, stating that Dr. Walter J. Barlow passed away on Sept. 4, 1937.

Drs. Daniel B. Hayden and Edward L. Chainski, Chicago, presented a paper on "Tinnitus: Etiology and Evaluation of the Various Methods of Treatment." Discussed by Drs. Willard L. Wood, Chicago (read by the secretary in his absence), and Charles E. H. Bates, San Francisco.

Dr. Francis D. Murphy, Milwaukee, read a paper on "Acute Glomerular Nephritis with Special Reference to the Course and Prognosis: A Study of 150 Cases." Discussed by Drs. Thomas Addis, San Francisco; James S. McLester, Birmingham, Ala., and Francis D. Murphy, Milwaukee.

Drs. L. H. Newburgh and Jerome W. Conn, Ann Arbor, Mich., presented a paper on "A New Interpretation of Diabetes Mellitus in Obese, Middle Aged Persons: Recovery Through Reduction of Weight: First Report." Discussed by Drs. Bernard Smith, Los Angeles; J. W. Sherrill, La Jolla, Calif.; Frank N. Allan, Boston, and Jerome W. Conn, Ann Arbor, Mich.

Dr. Edward H. Rynearson, Rochester, Minn., read a paper on "The Treatment of Addison's Disease." Discussed by Drs. Herbert M. Evans, Berkeley, Calif., Lester J. Palmer, Seattle; Willard O. Thompson, Chicago, and Edward H. Rynearson, Rochester, Minn.

Drs. Willard O. Thompson and Norris J. Heckel, Chicago, presented a paper on "The Present Status of the Treatment of Undescended Testes." Discussed by Drs. Hans Lissner, San Francisco; E. Kost Shelton, Los Angeles, and Willard O. Thompson, Chicago.

Drs. John Russell Twiss and James H. Barnard, New York, presented a paper on "The Management of Biliary Tract Disease Associated with Disturbances in Cholesterol Metabolism: A Review of 100 Cases Treated Medically and Surgically." Discussed by Drs. Arthur L. Bloomfield, San Francisco, and John Russell Twiss, New York.

SECTION ON SURGERY, GENERAL AND ABDOMINAL

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order at 9 o'clock by the chairman, Dr. Hugh H. Trout, Roanoke, Va.

Drs. Waltman Walters and Edwin John Kepler, Rochester, Minn., presented a paper on "Surgical Lesions of the Adrenal Glands." Discussed by Drs. Howard C. Naffziger, San Francisco; Hans Lissner, San Francisco, and Waltman Walters, Rochester, Minn.

Dr. J. Eastman Sheehan, New York, read a paper on "The Use of Free Full-Thickness Skin Graft." Discussed by Drs. George W. Pierce, San Francisco; H. L. D. Kirkham, Houston, Texas, and J. Eastman Sheehan, New York.

Dr. Charles Scott Venable, San Antonio, Texas, read a paper on "Electrolysis: The Controlling Factor in the Use of Metals in Fractures." Discussed by Drs. Edgar L. Gilreest, San Francisco; Leon O. Parker, San Francisco, and Charles Scott Venable, San Antonio, Texas.

Drs. Martin B. Tinker and Martin B. Tinker Jr., with the collaboration of Drs. A. T. Kerr and W. M. Sawdon, Ithaca,

N. Y., presented a paper on "Fracture of the Neck of the Femur." Discussed by Drs. Kellogg Speed, Chicago; Wallace I. Terry, San Francisco; Walter G. Stern, Cleveland, and Martin B. Tinker, Ithaca, N. Y.

Drs. George W. Swift and S. N. Berens, Seattle, presented a paper on "Cerebrocranial Injuries: Detailed Study of 1,433 Cases." Discussed by Drs. Harry E. Mock, Chicago, and George W. Swift, Seattle.

THURSDAY, JUNE 16—MORNING

Dr. Arthur Carroll Scott, Temple, Texas, read a paper on "Early Differential Diagnosis of Breast Tumors." Discussed by Drs. Irvin Abell, Louisville, Ky.; James F. Percy, Los Angeles, and Arthur Carroll Scott, Temple, Texas.

Dr. Hugh H. Trout, Roanoke, Va., read the chairman's address, entitled "Carcinoma of the Breast."

Dr. Howard M. Clute, Boston, read a paper on "Gastroduodenostomy for Certain Duodenal Ulcers." Discussed by Drs. Robert S. Dinsmore, Cleveland; Harold L. Thompson, Los Angeles; Moses E. Steinberg, Portland, Ore., and Howard M. Clute, Boston.

Dr. John Oscar Bower, Philadelphia, read a paper on "Routine Operations versus Scientific Management of Spreading Peritonitis Complicating Acute Perforative Appendicitis." Discussed by Drs. Harold P. Totten, Los Angeles; David A. Willis, Chicago; W. D. Haggard, Nashville, Tenn., and John Oscar Bower, Philadelphia.

Drs. Grover Cleveland Penberthy, Charles G. Johnston, R. J. Noer and J. C. Kemming, Detroit, presented a paper on "The Use of Small Intestine Decompression in the Treatment of Intestinal Obstruction." Discussed by Drs. Dwight L. Wilbur, San Francisco; Frederick A. Collier, Ann Arbor, Mich., and Charles G. Johnston, Detroit.

Drs. Fred W. Rankin, Lexington, Ky., and John Stewart Stage Combined Abdominoperineal Resection of the Rectum for Cancer." Discussed by Drs. Thomas M. Joyce, Portland, Ore.; Harvey B. Stone, Baltimore; Thomas E. Jones, Cleveland, and Fred W. Rankin, Lexington, Ky.

FRIDAY, JUNE 17—MORNING

The following officers were elected: chairman, Dr. Henry W. Cave, New York; vice chairman, Dr. Fred W. Bailey, St. Louis; secretary, Dr. Arthur W. Allen, Boston; member of the executive committee, Dr. Hugh H. Trout, Roanoke, Va. Drs. Fred W. Rankin, Lexington, Ky., and John Stewart Rodman, Philadelphia, were appointed to succeed themselves for a period of two years as representatives of the Section on Surgery on the American Board of Surgery.

Drs. Albert O. Singleton and Truman G. Bloeker Jr., Galveston, Texas, presented a paper on "The Problem of Disruption of Abdominal Wounds and Postoperative Hernia." Discussed by Drs. R. L. Sanders, Memphis, Tenn.; Alton Ochsner, New Orleans; Carl R. Steinke, Akron, Ohio; Frank K. Boland, Atlanta, Ga., and Albert O. Singleton, Galveston, Texas.

Dr. Charles Eaton Phillips, Los Angeles, read a paper on "Mediastinal Infections Due to Esophageal Perforations." Discussed by Drs. Simon Jesberg, Los Angeles, and Charles Eaton Phillips, Los Angeles.

Dr. Claude Frank Dixon, Rochester, Minn., read a paper on "Management of Intestinal Fistulas." Discussed by Drs. Gunther W. Nagel, San Francisco; Alton Ochsner, New Orleans, and Claude Frank Dixon, Rochester, Minn.

Drs. Frederick A. Collier and Howard C. Jackson, Ann Arbor, Mich., presented a paper on "Surgical Aspects of Hypoglycemia Associated with Liver Damage." Discussed by Drs. Emile F. Holman, San Francisco; Frank N. Allan, Boston; Theodore L. Althausen, San Francisco, and Frederick A. Collier, Ann Arbor, Mich.

Drs. Amos R. Koontz and Richard T. Shackelford, Baltimore, presented a paper entitled "Does Ether Narcosis Protect from Anaphylactic Shock?" Discussed by Drs. Franklin I. Harris, San Francisco, and Amos R. Koontz, Baltimore.

SECTION ON OBSTETRICS AND GYNECOLOGY

WEDNESDAY, JUNE 15—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr. E. D. Plass, Iowa City.

Drs. Eva F. Dodge, Montgomery, Ala., and Thomas T. Frost, Winston-Salem, N. C., presented a paper on "The Relation Between Blood Plasma Proteins and Toxemias of Pregnancy: A Preliminary Report." Discussed by Drs. Boyd Harden, Burlington, N. C.; Thomas Addis, San Francisco, and Eva F. Dodge, Montgomery, Ala.

Dr. Francis L. McPhail, Great Falls, Mont., read a paper on "Toxemias of Pregnancy: Cause and Treatment." Discussed by Drs. P. J. Carter, New Orleans; Lyle G. McNeile, Los Angeles, and Francis L. McPhail, Great Falls, Mont.

Dr. Frederic Schreiber, Detroit, read a paper on "Cyanosis of the Newborn and Associated Cerebral Injury." Discussed by Drs. C. B. Courville, Los Angeles; J. C. Litzenberg, Minneapolis, and Charles Edwin Galloway, Evanston, Ill.

Dr. Richard Torpin, Augusta, Ga., read a paper on "Study of Placental Site and Intra-Uterine Relationship by Original Method of Amniotic Sac Distention: Report of 400 Cases." Discussed by Drs. L. A. Calkins, Kansas City, Mo.; James R. Reinberger, Memphis, Tenn., and Richard Torpin, Augusta, Ga.

Dr. Donald J. Thorp, Seattle, read a paper on "Study of the Pelvic Joints During Pregnancy and Labor." Discussed by Drs. Alice F. Maxwell, San Francisco, and Donald J. Thorp, Seattle.

Drs. Emil Bogen and Jane Skillen, Olive View, Calif., presented a paper on "Pregnancy and Tuberculosis." Discussed by Drs. J. C. Irwin, Los Angeles, and Emil Bogen, Olive View, Calif.

The talking motion picture "The Birth of a Baby" was presented.

THURSDAY, JUNE 16—AFTERNOON

Dr. Joseph L. Baer, Chicago, read a paper on "The Cervix Uteri in Obstetrics and Gynecology." Discussed by Drs. Edward A. Schumann, Philadelphia; George W. Kosmak, New York; Goodrich C. Schauffler, Portland, Ore., and Joseph L. Baer, Chicago.

Dr. William T. Black, Memphis, Tenn., read a paper on "Consideration of Good and Bad Results in the Treatment of Chronic Cervicitis." Discussed by Drs. R. G. Craig, San Francisco; Harvey B. Matthews, Brooklyn; Channing W. Barrett, Chicago; Leo P. Fitzgerald, St. Louis, and William T. Black, Memphis, Tenn.

Dr. Donald C. Collins, Los Angeles, read a paper on "The Management of Tuberculosis of the Cervix Uteri." Discussed by Drs. Ludwig A. Emge, San Francisco; Henry Schmitz, Chicago, and Donald C. Collins, Los Angeles.

Dr. Charles Edwin Galloway, Evanston, Ill., read a paper on "Color Photography of the Uterine Cervix." Discussed by Drs. J. M. Bruner, Des Moines, Iowa, and Charles Edwin Galloway, Evanston, Ill.

Drs. Virgil S. Counseller and Robert E. Bedard, Rochester, Minn., presented a paper on "Uterine Myomectomy: Analysis of Indications and Results in 500 Cases." Discussed by Drs. Frank W. Lynch, San Francisco, and Virgil S. Counseller, Rochester, Minn.

Dr. E. D. Plass, Iowa City, read the chairman's address, entitled "Undergraduate Obstetric Teaching."

FRIDAY, JUNE 17—AFTERNOON

The following officers were elected: chairman, Dr. Harvey B. Matthews, Brooklyn; vice chairman, Dr. Ludwig A. Emge, San Francisco; secretary, Dr. Norman F. Miller, Ann Arbor, Mich.; delegate, Dr. George Gray Ward, New York; alternate, Dr. J. P. Pratt, Detroit.

The secretary reported that the executive committee recommended that the Section on Obstetrics and Gynecology endorse the action of the Committee on Maternal Welfare in supporting the film "The Birth of a Baby."

On motion regularly made and seconded, it was voted that the section endorse the action of the Committee on Maternal Welfare.

The secretary read a resolution to be offered to the Council on Pharmacy and Chemistry and the Council on Physical Therapy of the American Medical Association as follows:

WHEREAS, The House of Delegates of the American Medical Association at its Annual Meeting in Atlantic City in 1937 adopted three recommendations offered by the Association's Committee to Study Contraceptive Practices and Related Problems, namely:

1. To make clear to physicians their legal rights in relation to the use of contraceptives;
2. That investigation of materials, devices and methods recommended or employed for the prevention of conception be made, and the results of such investigation be published for the information of the medical profession;
3. That the Council on Medical Education and Hospitals of the American Medical Association be requested to promote thorough instruction in our medical schools with respect to various practices pertaining to fertility and sterility, due attention being paid to their positive as well as their negative aspects; and

WHEREAS, The Section on Obstetrics and Gynecology of the American Medical Association knows of the report of progress issued by the Association during the past year following up these recommendations; be it

Resolved, That the Section on Obstetrics and Gynecology of the American Medical Association heartily endorses the adoption of these recommendations, congratulates the Association on its stand, and in view of the urgency of the situation requests early action in accordance with said recommendations.

On motion regularly made and duly seconded, it was voted to adopt the resolution.

It was voted to appoint Dr. Harvey B. Matthews, Brooklyn, delegate to the annual meeting of the New York Obstetrical Society.

Dr. Arthur H. Curtis, Chicago, read a paper on "Anatomic Factors in the Pathogenesis and Treatment of Urethrocele and Cystocele." Discussed by Drs. W. T. Dannreuther, New York; G. D. Royston, St. Louis; Joseph L. Bacr, Chicago, and Arthur H. Curtis, Chicago.

Dr. Goodrich C. Schaffler, Portland, Ore., read a paper on "Practical Deductions from the Management of 225 Cases of Infection of the Immature Vagina." Discussed by Drs. C. F. Fluhmann, San Francisco; H. Close Hesselstine, Chicago; Richard Torpin, Augusta, Ga., and Goodrich C. Schaffler, Portland, Ore.

Drs. Fred L. Adair, H. Close Hesselstine and Lucile Hac, Chicago, presented a paper on "Experimental Study of Behavior of Sulfanilamide." Discussed by Drs. Herbert O. Calvery, Washington, D. C.; J. P. Pratt, Detroit, and H. Close Hesselstine, Chicago.

Drs. Henry Schmitz, Herbert E. Schmitz and John Francis Sheehan, Chicago, presented a paper on "The Action of Measured Doses of 800 Kilovolt Roentgen Rays on Carcinomas of the Uterine Cervix." Discussed by Drs. D. G. Morton, San Francisco; Robert R. Newell, San Francisco; L. H. Garland, San Francisco, and Henry Schmitz, Chicago.

SECTION ON OPHTHALMOLOGY

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order at 9 o'clock by the chairman, Dr. Parker Heath, Detroit.

Dr. Parker Heath, Detroit, read the chairman's address.

The chairman called for an executive session to consider a motion made by Dr. Edward Jackson, Denver, seconded by Dr. John Green, St. Louis, that a committee of three be appointed to consider the chairman's address. The motion was voted on and carried.

It was recommended by the executive committee that the section dedicate the volume of this section's meeting and proceedings to Dr. John E. Weeks, Portland, Ore., and Dr. Edward Jackson, Denver. The recommendation was adopted by a rising vote.

Drs. Phillips Thygeson, New York, and Polk Richards, Albuquerque, N. M., presented a paper on "The Nature of the Filtrable Agent of Trachoma." Discussed by Drs. Edwin William Schultz, Santa Clara, Calif.; Harry S. Gradle, Chicago, and Phillips Thygeson, New York.

Drs. Frederick H. Verhoeff and Merrill J. King, Boston, presented a paper on "Scleromalacia Perforans: Report of a Case in Which the Eye was Examined Microscopically." Discussed by Drs. Frederick A. Kiehle, Portland, Ore.; Samuel

P. Oast, New York; Arthur J. Bedell, Albany, N. Y.; Trygve Gundersen, Boston; Lloyd Mills, Los Angeles, and Frederick H. Verhoeff, Boston.

Dr. P. J. Leinfelder, Iowa City, read a paper on "Histopathology in Amblyopia Following Tryparsamide Therapy." Discussed by Drs. Frederick C. Cordes, San Francisco; Max Fine, San Francisco; John E. Weeks, Portland, Ore.; Otis A. Sharpe, San Francisco; Frederick H. Verhoeff, Boston; Edward Jackson, Denver, and P. J. Leinfelder, Iowa City.

Dr. Fred Loc, Rosebud, S. D., read a paper on "Sulfanilamide Treatment of Trachoma." Discussed by Dr. Harry S. Gradle, Chicago.

Dr. John M. Wheeler, New York, read a paper on "Ptosis Correction by Attachment of Orbicularis Strips to Superior Rectus." Discussed by Drs. John O. McReynolds, Dallas, Texas; John E. Weeks, Portland, Ore.; Warren D. Horner, San Francisco; C. Allen Dickey, San Francisco, and John M. Wheeler, New York.

THURSDAY, JUNE 16—MORNING

The chairman called for an executive session to consider the report by Dr. Albert C. Snell, Rochester, N. Y., on Visual Standards for Licensure to Operate Motor Vehicles. The report was adopted and referred to the House of Delegates.

The executive session was terminated on motion duly seconded and carried.

Dr. Edward Jackson, Denver, read a paper on "Theory and Use of Cross Cylinders." Discussed by Drs. Charles K. Mills, Woodland, Calif.; William H. Crisp, Denver; John Green, St. Louis; Henry B. Lemere, Beverly Hills, Calif., and Edward Jackson, Denver.

Dr. Albert C. Snell, Rochester, N. Y., read a paper on "Visual Acuity: Its Relation to Form Sense and the Application of This Relationship to Medicolegal Problems." Discussed by Drs. D. F. Harbridge, Phoenix, Ariz.; Ralph O. Rychener, Memphis, Tenn.; William H. Crisp, Denver; S. Judd Beach, Portland, Maine, and Albert C. Snell, Rochester, N. Y.

Drs. John E. L. Keyes and Harry Goldblatt, Cleveland, presented a paper on "Vascular Changes in the Eyes in Experimental Hypertension." Discussed by Drs. Arthur J. Bedell, Albany, N. Y.; William L. Benedict, Rochester, Minn., and John E. L. Keyes, Cleveland.

Dr. Hermann Burian, Hanover, N. H., read a paper on "Fusional Movements: Role of Peripheral Retinal Stimuli." Discussed by Drs. Avery M. Hicks, San Francisco; Walter H. Fink, Minneapolis; Frederick H. Verhoeff, Boston; K. C. Brandenburg, Long Beach, Calif.; Otto Barkan, San Francisco, and Hermann Burian, Hanover, N. H.

Drs. Conrad Berens and Donald W. Bogart, New York, presented a paper on "Postoperative Complication of Cataract Operations." Discussed by Drs. Watson W. Gailey, Jr., Bloomington, Ill.; Joseph L. McCool, San Francisco, and Conrad Berens, New York.

FRIDAY, JUNE 17—MORNING

Executive Session

On motion duly seconded and carried, the following resolution was adopted by the section:

Resolved, That the Section on Ophthalmology records its emphatic opposition to any measures such as the proposed State Humane Pound Law which will hinder or curtail animal experimentation as conducted by those fully qualified in biology and medicine.

Dr. Albert C. Snell, Rochester, N. Y., presented the report of the Committee on Compensation and Visual Economics. The report was accepted.

Dr. William L. Benedict, Rochester, Minn., read the report of the Committee on Optics and Visual Physiology. The report was accepted and the recommendations adopted.

The report of the Committee on the Knapp Testimonial Fund was presented by Dr. Parker Heath, Detroit. The report was accepted and the committee thanked.

Dr. Derrick Vail, Cincinnati, the secretary, reported for the Committee on Awarding the Knapp Medal that no award would be made this year.

Dr. Derriek Vail, Cincinnati, read the report of the Committee on National Museum of Ophthalmic Pathology, in the absence of the chairman, Dr. James S. Friedenwald, Baltimore. The report was accepted.

The report of the Committee on the American Board of Ophthalmology was read by Dr. William H. Crisp, Denver. The report was accepted.

Dr. Georgiana Dvorak Theobald, Oak Park, Ill., read the report of the Committee on Scientific Exhibit from the section. The report was accepted and the committee thanked.

Dr. Derriek Vail, Cincinnati, reported progress for the Committee to Cooperate with the National Committee on Prevention of Blindness. He also reported that some contact with the National Society for the Prevention of Blindness and the Social Security Board has been made and that the committee wished to be continued. It was moved, duly seconded and carried, that the report be accepted and the committee continued.

Dr. Arthur J. Bedell, Albany, N. Y., reported as delegate of the section to the House of Delegates. His report was accepted with thanks.

Dr. John Green, St. Louis, read the report of the Committee on the Museum of Ophthalmic History, in the absence of the chairman, Dr. Burton Chance, Philadelphia. The report was accepted.

Dr. Clifford B. Walker, Los Angeles, read the report of the Committee on Standardization of Drugs and Instruments. The report was accepted and the committee thanked.

A vote of thanks was extended to the Committee on Visual Standards for Operating Motor Vehicles. A vote of thanks was also extended to the local committee on arrangements.

The following officers were elected: chairman, Dr. S. Judd Beach, Portland, Maine; vice chairman, Dr. Frederick C. Cordes, San Francisco; secretary, Dr. Derriek Vail, Cincinnati.

Dr. Conrad Berens, New York, was appointed to fill a vacancy on the Committee on American Board of Ophthalmology.

Dr. Georgiana Dvorak Theobald, Oak Park, Ill., was reelected to fill the vacancy of chairman of the Committee for Scientific Exhibit from the Section. Dr. Theodore E. Sanders, St. Louis, and Dr. Derriek Vail, Cincinnati, were appointed as members of the committee.

To fill a vacancy on the American Committee (Joint) on Optics and Visual Physiology, Dr. Walter B. Lancaster, Boston, was reappointed for three years.

To the Joint Committee on Orthoptics, to represent the section, the following appointments were made: Dr. Derriek Vail, Cincinnati, chairman; Everett L. Goar, Houston, Texas, and Harold Gifford, Omaha.

To the Advisory Committee of Student Health Association, Dr. William L. Benedict, Rochester, Minn., was appointed.

To the Committee on Museum of Ophthalmic History, the following were appointed: Dr. Robert Sattler, Cincinnati; Dr. Frank H. Burch, St. Paul; Dr. John B. Weeks, Portland, Ore.; Dr. F. Phinizy Calhoun, Atlanta, Ga.; Dr. Adolph O. Pfingst, Louisville, Ky.; Dr. Allen Greenwood, Boston, and Dr. Knapp Pischel, San Francisco.

To the Committee of National Museum of Ophthalmic Pathology (Joint), Dr. Jonas S. Friedenwald, Baltimore, was appointed.

To the Committee from the Section to cooperate with the National Committee for the Prevention of Blindness, the following were appointed: Dr. William H. Luedde, St. Louis, chairman; Dr. John W. Burke, Washington, D. C., and Dr. Delaware F. Harbridge, Phoenix, Ariz.

To the Committee on Standardization of Drugs and Instruments, the following were appointed: Dr. Clifford Walker, Los Angeles (one year); Dr. Francis H. Adler, Philadelphia (two years); Dr. Jonas S. Friedenwald, Baltimore (three years); Dr. Sanford R. Gifford, Chicago (four years), and Dr. Alfred Cowan, Philadelphia (five years).

Drs. Arnold Knapp, New York, Nelson M. Black, Miami, Fla., and Walter Parker, Detroit, were appointed to constitute the Knapp Medal Award Committee.

Dr. John Green, St. Louis, read the report on the Scientific Medal, and the medal was awarded to Dr. Phillips Thygeson of New York.

At the Demonstration Session the following were shown: Dr. Warren D. Horner, San Francisco, presented a device for removing adhesive plaster dressings.

Dr. Clifford B. Walker, Los Angeles, demonstrated a new electrical unit for separated retina work.

Dr. Otto Barkan, San Francisco, presented an operative procedure for the shallow chamber type of glaucoma.

Dr. K. C. Brandenburg, Long Beach, Calif., presented a flashing device for orthoptic trainings.

Dr. Walter H. Fink, Minneapolis, presented a depth perception apparatus.

Dr. Conrad Berens, New York, presented a prism scale.

Scientific Session

Dr. Trygve Gundersen, Boston, read a paper on "Vascular Obliteration for Various Types of Keratitis, with Special Reference to the Nutrition of Corneal Epithelium." Discussed by Drs. Albert D. Ruedemann, Cleveland; Charles A. Bahn, New Orleans, and Trygve Gundersen, Boston.

Dr. Theodore E. Sanders, St. Louis, read a paper on "Mixed Tumors of the Lacrimal Gland." Discussed by Drs. William L. Benedict, Rochester, Minn.; Georgiana Dvorak Theobald, Oak Park, Ill.; Howard C. Naffziger, San Francisco, and Theodore E. Sanders, St. Louis.

Dr. Harold F. Whalman, Los Angeles, read a paper on "Vernal Conjunctivitis." Discussed by Drs. M. N. Beigelman, Los Angeles; Albert N. Lemoine, Kansas City, Mo., and Harold F. Whalman, Los Angeles.

Dr. George S. Sharp, Pasadena, Calif., read a paper on "Treatment of Cancer of the Eyelids." Discussed by Drs. Everett L. Goar, Houston, Texas; Dohrmann K. Pischel, San Francisco, and Otis A. Sharpe, San Francisco.

SECTION ON LARYNGOLOGY, OTOTOLOGY AND RHINOLOGY

WEDNESDAY, JUNE 15—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr. Gordon B. New, Rochester, Minn.

Dr. Forrest J. Pinkerton, Honolulu, Hawaii, read a paper on "Leptosy of the Upper Respiratory Tract: Discussion of Early and Moderately Advanced Cases." Discussed by Drs. R. W. Burlingame, San Francisco; Ralph Fenton, Portland, Ore., and Forrest J. Pinkerton, Honolulu, Hawaii.

Dr. Austin A. Hayden, Chicago, read a paper on "Hearing Aids from Otologists' Audiograms."

Drs. Isaac H. Jones and Vern O. Knudsen, Los Angeles, presented a paper on "What Audiometry Can Now Mean in Routine Practice."

These two papers were discussed by Drs. William P. Wherry, Omaha; Horace Newhart, Minneapolis; Harold A. Fletcher, San Francisco; Howard A. Carter, Chicago; David Higbee, San Diego, Calif.; Austin A. Hayden, Chicago, and Isaac H. Jones, Los Angeles.

Dr. Edward J. Whalen, Hartford, Conn., read a paper on "Fungous Infections of the External Ear." Discussed by Drs. William D. Gill, San Antonio, Texas; Millard F. Arbuckle, St. Louis, and Edward J. Whalen, Hartford, Conn.

Dr. Bert E. Hempstead, Rochester, Minn., read a paper on "Osteomas of Paranasal Sinuses and the Mastoid Process, with a Report of Cases." Discussed by Drs. George H. Willcutt, San Rafael, Calif.; Thomas E. Carmody, Denver, and H. B. Graham, San Francisco.

THURSDAY, JUNE 16—AFTERNOON

Dr. Gordon B. New, Rochester, Minn., read the chairman's address, entitled "Benign Tumors of the Larynx: A Study of 722 Cases."

Drs. Chevalier Jackson and Chevalier L. Jackson, Philadelphia, presented a paper on "Cancer of the Larynx." Discussed by Drs. Max Cutler, Chicago; Simon Jesberg, Los Angeles; Joseph C. Beck, Chicago, and Chevalier L. Jackson, Philadelphia.

Dr. H. Marshall Taylor, Jacksonville, Fla., read a paper on "Chilling of the Body Surfaces and Its Relationship to Aural and Sinus Infection." Discussed by Drs. Edward Cecil Sewall,

San Francisco; John J. Shea, Memphis, Tenn.; Burt R. Shurly, Detroit, and H. Marshall Taylor, Jacksonville, Fla.

Dr. E. G. Galbraith, Toledo, Ohio, read a paper on "The Clinical Significance of Recent Work on Apneumohematosiis." Discussed by Drs. J. Mackenzie Brown, Los Angeles, and E. G. Galbraith, Toledo, Ohio.

Dr. Frank R. Spencer, Boulder, Colo., read a paper on "Malignant Disease of the External Ear, with a Report of Eight Cases." Discussed by Drs. H. P. Mosher, Boston; Gordon B. New, Rochester, Minn.; Thomas E. Carmody, Denver, and Frank R. Spencer, Boulder, Colo.

Drs. Frank B. Kistner and Thomas D. Robertson, Portland, Ore., presented a paper on "Benign Granuloma of the Nose (So-Called Sarcoid): Report of a Case." Discussed by Drs. Matthew N. Hosmer, San Francisco, and Frederick T. Hill, Waterville, Maine.

FRIDAY, JUNE 17—AFTERNOON

Dr. Horace Newhart, Minneapolis, presented a portable booth for use in hearing tests and an audiometer.

Dr. Joseph C. Beck, Chicago, reported for the American Board on Otolaryngology that sixty-five men had taken the examination in this city.

In the absence of Dr. Chevalier Jackson, Dr. LeRoy A. Schall, Boston, read the report of the Committee on Lye Legislation, which was accepted.

The following officers were elected: chairman, Dr. H. Marshall Taylor, Jacksonville, Fla.; vice chairman, Dr. Harold A. Fletcher, San Francisco; secretary, Dr. LeRoy A. Schall, Boston.

Dr. William J. Mellinger, Santa Barbara, Calif., read a paper on "The Petrous Apex of the Temporal Bone and Its Relations." Discussed by Drs. J. Parsons Schaeffer, Philadelphia; Olof Larsell, Portland, Ore.; Henry J. Profant, Santa Barbara, Calif.; Louis K. Guggenheim, Los Angeles; Joseph C. Beck, Chicago, and William J. Mellinger, Santa Barbara, Calif.

Drs. Durwin H. Brownell and I. Jerome Hauser, Ann Arbor, Mich., presented a paper on "Malignancy of the Nasopharynx." Discussed by Drs. Joseph C. Beck, Chicago; John H. Childrey, San Francisco; Robert F. Ridpath, Philadelphia; James F. Percy, Los Angeles; Barney M. Kully, Los Angeles, and I. Jerome Hauser, Ann Arbor, Mich.

Dr. Herman Z. Semenov, Los Angeles, read a paper on "Surgical Pathology of Sinusitis." Discussed by Drs. Roy F. Nelson, Oakland, Calif.; Raymond O. Dart, San Francisco, and Herman Z. Semenov, Los Angeles.

Dr. David R. Higbee, San Diego, Calif., read a paper on "Cerebrospinal Rhinorrhea, with a Report of a Case Cured by Operation." Discussed by Drs. Howard C. Naffziger, San Francisco; Arthur C. Jones, Boise, Idaho, and David R. Higbee, San Diego, Calif.

Dr. C. Coulter Charlton, Atlantic City, N. J., read a paper on "Atrophic Rhinitis and Ozena at the Seashore: Further Observations." Discussed by Drs. Frank B. Kistner, Portland, Ore.; Robert F. Ridpath, Philadelphia, and C. Coulter Charlton, Atlantic City, N. J.

SECTION ON PEDIATRICS

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order at 9:10 by the chairman, Dr. Clifford Sweet, Oakland, Calif.

Dr. Clifford Sweet, Oakland, Calif., read the chairman's address, entitled "Opportunities in Pediatric Practice."

Dr. Oswald H. Robertson, Chicago, read a paper on "Recent Studies on Experimental Lobar Pneumonia: Pathogenesis, Recovery and Immunity."

Dr. James A. Conner, Chicago, read a paper on "Treatment of Pertussis." Discussed by Drs. John M. Frawley, Fresno, Calif.; John J. Miller Jr., San Francisco; W. Ambrose McGee, Richmond, Va., and James A. Conner, Chicago.

Drs. Perrin H. Long and Eleanor A. Bliss, Baltimore, presented a paper on "Further Observations on the Mode of Action, the Clinical Use and the Toxic Manifestations of Sulfanilamide." Discussed by Drs. Francis Scott Smyth, San Francisco; Thomas B. Cooley, Detroit, and Perrin H. Long, Baltimore.

Dr. Henry F. Helmholz, Rochester, Minn., read a paper on "Diagnosis and Treatment of Urinary Infections." Discussed by Dr. William P. Herbst, Washington, D. C.

Dr. Bret Ratner, New York, read a paper on "Onset and Natural Progress of Allergy in Childhood." Discussed by Drs. Milton B. Cohen, Cleveland, and Tell Nelson, Evanston, Ill.

THURSDAY, JUNE 16—MORNING

A joint meeting was held with the Section on Radiology.

Dr. W. Walter Wasson, Denver, read a paper on "Nasal Accessory Sinus Disease: Its Beginning and Progress as Portrayed by the Roentgen Ray."

Dr. Edward Clay Mitchell, Memphis, Tenn., read a paper on "Sinus Treatment in Children."

Dr. Sidney N. Parkinson, Oakland, Calif., read a paper on "Ephedrine in a Physiologic Vehicle and Lateral Head-Low Posture in Treatment of the Nose and Sinuses."

These three papers were discussed by Drs. Thomas E. Carmody, Denver; John J. Shea, Memphis, Tenn.; Roy F. Nelson, Oakland, Calif.; Edward C. Sewall, San Francisco; Eric Ogden, Berkeley, Calif.; Clifford Sweet, Oakland, Calif.; W. Walter Wasson, Denver, and Sidney N. Parkinson, Oakland, Calif.

Drs. A. Graeme Mitchell and Josef Warkany, Cincinnati, presented a paper on "The Thymus Problem in Children."

Dr. Clyde K. Hasley, Detroit, read a paper on "Radiology's Responsibility in the Diagnosis and Treatment of Thymic Hyperplasia."

Drs. L. G. Rowntree and N. H. Einhorn, Philadelphia, presented a paper on "Experimental Phases of the Thymus Problem."

These three papers were discussed by Drs. W. Edward Chamberlain, Philadelphia; Edith Boyd, Minneapolis; Randolph G. Flood, San Francisco; Herbert E. Coe, Seattle; Henry F. Helmholz, Rochester, Minn., and Clyde K. Hasley, Detroit.

The chairman appointed, as a resolutions committee, Drs. E. J. Barnett, Spokane, Wash., chairman, and E. Earl Moody, Los Angeles.

FRIDAY, JUNE 17—MORNING

The following officers were elected: chairman, Dr. Edward Clay Mitchell, Memphis, Tenn.; vice chairman, Dr. Jean V. Cook, St. Louis, Mo.; secretary, Dr. Albert D. Kaiser, Rochester, N. Y.; delegate, Dr. William Weston, Columbia, S. C.; alternate, Dr. A. Graeme Mitchell, Cincinnati; representative to Scientific Exhibit, Dr. Arthur F. Abt, Chicago.

Dr. Horton R. Casparis, Nashville, Tenn., presented the report of the executive committee as follows:

Dr. Hugh L. Dwyer, Kansas City, Mo., reported to the executive committee that the amount at present in the Abraham Jacobi Memorial Fund is \$7,476.68; that from year to year the income from the fund has been used to help defray the expenses of guest speakers; that until recently members were called on to augment this fund by donating to it but that during the past year or two this was not done, and temporarily it is recommended that the policy be continued.

The executive committee recommended that Dr. Hugh L. Dwyer, Kansas City, Mo., be elected secretary-treasurer of the Abraham Jacobi fund for the next year.

On motion by Dr. William Weston, Columbia, S. C., duly seconded, Dr. Dwyer was elected for one year secretary-treasurer of the Abraham Jacobi Fund.

Dr. E. J. Barnett, Spokane, Wash., chairman of the resolutions committee, presented the report of that committee, as follows:

WHEREAS, The Section on Pediatrics of the American Medical Association has enjoyed an excellently arranged meeting through the efforts of the San Francisco pediatricians; and,

WHEREAS, The local pediatricians have also been royal hosts; and, WHEREAS, Each member of the section feels it is a privilege to have attended this meeting of 1938 and looks forward to an early return to this hospitable, friendly city; therefore, be it

Resolved, That the Section on Pediatrics here assembled extend its thanks and appreciation to our friends, the pediatricians of San Francisco.

E. J. BARNETT.
E. EARL MOODY.

On motion of Dr. William Weston, Columbia, S. C., duly seconded, the report was unanimously adopted.

Dr. Henry F. Helmholtz, Rochester, Minn., reported that he had extended the invitation of the section to the International Congress in Rome last fall; that the next International Congress will meet in Boston, Sept. 9, 10 and 11, 1940, and urged all who could to attend.

Dr. William Weston, Columbia, S. C., delegate to the House, addressed the section.

It was suggested by the chairman that the matter of program for next year be left to the executive committee and the secretary, with the understanding that if it seems feasible to work out a suitable panel discussion next year the section has no objection to it.

Drs. Julian D. Boyd and Robert L. Jackson, Iowa City, presented a paper on "Levels of Control in the Treatment of Diabetes Mellitus." Discussed by Drs. Percival A. Gray Jr., Santa Barbara, Calif.; Leona M. Bayer, San Francisco, and Julian D. Boyd, Iowa City.

Dr. Mandel L. Spivek, Chicago, read a paper on "A Consideration of Present Day Newborn Nursery Practice and Suggestions for Improvement." Discussed by Drs. Ernest Wolff, San Francisco; L. Howard Smith, Portland, Ore.; Maurice L. Blatt, Chicago; M. K. Wylder, Albuquerque, N. M.; Irving J. Wolman, Philadelphia, and Mandel L. Spivek, Chicago.

Dr. Horton R. Casparis, Nashville, Tenn., read a paper on "Should the Tuberculosis Problem in Children be the Responsibility of the Health Officer or the Pediatrician?" Discussed by Drs. V. W. Spickard, Seattle; M. K. Wylder, Albuquerque, N. M.; Henry F. Helmholtz, Rochester, Minn.; Ernest Wolff, San Francisco, and Horton R. Casparis, Nashville.

Dr. W. Ambrose McGee, Richmond, Va., read a paper on "Allergy of Childhood: Prophylaxis, Early Recognition and Treatment." Discussed by Drs. George Piness, Los Angeles; Margaret M. Nicholson, Washington, D. C.; Julian Cohn, Los Angeles, and W. Ambrose McGee, Richmond.

Dr. Katsuji Kato, Chicago, read a paper on "Hematologic Indexes in Normal and Anemic Infants and Children: A Triaxial Graphic Method." Discussed by Drs. Russell L. Haden, Cleveland, and Katsuji Kato, Chicago.

Dr. Orville E. Barbour, Peoria, Ill., read a paper on "Certain Therapeutic Effects of Whole Adrenal Gland by Mouth." Discussed by Drs. E. Kost Shelton, Los Angeles; Hans Lissner, San Francisco; Mandel L. Spivek, Chicago, and Orville E. Barbour, Peoria.

SECTION ON PHARMACOLOGY AND THERAPEUTICS

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order at 9:05 by the chairman, Dr. Russell L. Haden, Cleveland.

Dr. Samuel S. Altshuler, Detroit, read a paper on "The Use of Crystalline Insulin in the Treatment of Patients with Severe Diabetes."

Drs. Percival Allen Gray Jr., Fritz Emil Bischoff and W. D. Sansum, Santa Barbara, Calif., presented a paper on "Histone Insulin and Allied Insulin Compounds."

These two papers were discussed by Drs. H. Clare Shephardson, San Francisco; Roger Holcomb, Portland, Ore.; A. A. Herold, Shreveport, La.; Lester J. Palmer, Seattle; Samuel S. Altshuler, Detroit, and Percival Allen Gray Jr., Santa Barbara, Calif.

A motion was carried to send a message of regret to Dr. Irving S. Wright, New York, secretary, ill for the past two months. Dr. Erwin E. Nelson, New Orleans, vice chairman, acted in his stead.

Drs. Tom Douglas Spies and William B. Bean, Cincinnati, and Robert E. Stone, Birmingham, Ala., presented a paper on "The Treatment of Pellagra by Means of Nicotinic Acid." Discussed by Drs. Thomas T. Mackie, New York; Julian M. Ruffin, Durham, N. C.; Mohammed Abdo Abbasy, Cairo, Egypt; J. N. Baker, Montgomery, Ala.; James E. Paullin, Atlanta, Ga.; A. J. Carlson, Chicago; P. J. Hanzlik, San Francisco; William De Kleine, American Red Cross, and Tom Douglas Spies, Cincinnati.

Dr. Gordon A. Alles, Los Angeles, read a paper on "Drugs Acting on the Autonomic Nervous System: Phenyl and Sub-

stituted Phenyl Alkylamines." Discussed by Drs. Clinton H. Thienes, Los Angeles; M. H. Nathanson, Los Angeles; P. J. Hanzlik, San Francisco, and Gordon A. Alles, Los Angeles.

Dr. M. L. Tainter, San Francisco, read a paper on "The Choice of a Sympathetic Stimulant for Treating Abnormal Circulatory States." Discussed by Drs. David A. Rytand, San Francisco; E. Geiger, Budapest Hungary; Gordon A. Alles, Los Angeles, and M. H. Nathanson, Los Angeles.

Drs. George P. Robb and Israel Steinberg, New York, presented a paper on "Visualization of the Pulmonary Circulation in Man by Means of Peripheral Intravenous Injection." Discussed by Drs. Edgar V. Allen, Rochester, Minn., and George P. Robb, New York.

THURSDAY, JUNE 16—MORNING

Dr. Russell L. Haden, Cleveland, read the chairman's address, entitled "Historical Aspects of the Use of Iron and Liver in the Treatment of Anemia."

The following papers were read as a symposium on "Blood Dyscrasias":

Dr. Edwin E. Osgood, Portland, Ore.: "The Culture of Human Marrow as an Aid in the Evaluation of Therapeutic Agents."

Dr. Harold W. Jones, Philadelphia: "The Treatment of Pathologic Hemorrhage."

Dr. Nathan Rosenthal, New York: "The Treatment of Thrombocytopenic Purpura Haemorrhagica."

Dr. William P. Murphy, Boston: "The Treatment of Pernicious Anemia."

Drs. W. M. Fowler and Adelaide P. Barer, Iowa City: "The Treatment of Iron Deficiency Anemias."

These five papers were discussed by Drs. L. W. Diggs, Memphis, Tenn.; F. W. Madison, Milwaukee; Frank J. Heck, Rochester, Minn.; Frank Nuzum, Santa Barbara; Edwin E. Osgood, Portland, Ore.; Harold W. Jones, Philadelphia; Nathan Rosenthal, New York; William P. Murphy, Boston, and W. M. Fowler, Iowa City.

FRIDAY, JUNE 17—MORNING

The following officers were elected: chairman, Dr. Erwin E. Nelson, New Orleans; vice chairman, Dr. Irving S. Wright, New York; secretary, Dr. Edgar V. Allen, Rochester, Minn.; council: Drs. Cary Eggleston, New York, and Russell L. Haden, Cleveland.

Dr. M. Herbert Barker, Chicago, read a paper on "Sodium Chloride Tolerance in Chronic Nephritis, with Some Observations on Potassium and Sulfate Ions." Discussed by Drs. Thomas Addis, San Francisco; William Dock, San Francisco; A. A. Herold, Shreveport, La., and M. Herbert Barker, Chicago.

Dr. Herbert O. Calvery, Washington, D. C., read a paper on "Chronic Effects of Ingested Lead and Arsenic." Discussed by Drs. Floyd DeEds, San Francisco; Erwin E. Nelson, New Orleans, and P. J. Hanzlik, San Francisco.

Drs. S. R. Mettler and Chauncey D. Leake, San Francisco, presented a paper on "The Evaluation of Drugs Commonly Employed as Diagnostic Aids in Clinical Medicine." Discussed by Drs. Frank R. Nuzum, Santa Barbara, Calif., and Russell L. Haden, Cleveland.

Dr. Norman H. Plummer, New York, read a paper on "The Use of Serum in the Higher Types of Pneumonia." Discussed by Drs. Edward L. Bortz, Philadelphia; Byron F. Francis, Seattle; Philip G. Corliss, Somerton, Ariz.; William C. Bruff, Whittier, Calif., and Norman H. Plummer, New York.

Dr. F. M. Pottenger Sr., Monrovia, Calif., read a paper on "The Use of Adrenal Hormones in the Treatment of Asthenia, Asthma and Tuberculosis." No discussion.

Drs. E. G. Bannick, A. E. Brown and F. P. Foster, Rochester, Minn., presented a paper entitled "Further Clinical Observations on Therapeutic Effectiveness and Toxicity of Sulfanilamide and Several Related Compounds." Discussed by Drs. Dwight L. Wilbur, San Francisco; Edwin E. Osgood, Portland, Ore.; Russell L. Haden, Cleveland, and E. G. Bannick, Rochester, Minn.

SECTION ON PATHOLOGY AND PHYSIOLOGY

WEDNESDAY, JUNE 15—AFTERNOON

The meeting was called to order at 2:05 by the chairman, Dr. Roy R. Kracke, Emory University, Ga.

The "Report on the Council on Medical Education and Hospitals to the House of Delegates of the American Medical Association" was read by the chairman.

The following applicants for Associate Fellowship were nominated: Benjamin J. Clawson, M.D., Minneapolis; Joseph Erlanger, M.D., St. Louis; John P. Quigley, M.D., Cleveland; William C. Rose, Ph.D., Urbana, Ill.

A nominating committee was appointed, consisting of Drs. F. H. Lamb, Davenport, Iowa, chairman; Thomas B. Magath, Rochester, Minn., and Alvin G. Foord, Pasadena, Calif.

Dr. R. A. Bartholomew, Atlanta, Ga., read a paper on "Pathology of the Placenta, with Particular Reference to Infarcts and Their Relation to the Toxemias of Pregnancy." Discussed by Drs. A. J. Carlson, Chicago; Roy R. Kracke, Emory University, Ga.; Frank W. Hartman, Detroit, and R. A. Bartholomew, Atlanta, Ga.

Dr. Edwin F. Hirsch, Chicago, read a paper on "Arterial Occlusions with Aseptic Necrosis of Bones." No discussion.

Dr. H. E. Robertson, Rochester, Minn., read a paper on "The Etiology and Pathogenesis of Alcoholic Cirrhosis of the Liver." Discussed by Drs. Ernest M. Hall, Los Angeles; Frank R. Menne, Portland, Ore.; A. J. Carlson, Chicago, and Charles L. Connor, San Francisco.

Dr. Meyer Bodansky, Galveston, Texas, read a paper on "Regulation of the Serum Calcium Level During Pregnancy." No discussion.

Drs. Frank W. Hartman and Victor Schelling, Detroit, presented a paper entitled "Studies on Hexyl Chloro-m-Cresol and Other Carbocyclic Antiseptics." No discussion.

Dr. Samuel M. Feinberg, Chicago, and O. C. Durham, North Chicago, Ill., presented a paper on "Annual Variations in Seasonal Aspects of Mold Allergy: A Clinical and Atmospheric Study of Over Three Years." Discussed by Drs. J. H. Black, Dallas, Texas, and F. W. Wittich, Minneapolis, and O. C. Durham, North Chicago, Ill.

THURSDAY, JUNE 16—AFTERNOON

Dr. Roy R. Kracke, Emory University, Ga., read the chairman's address, entitled "Relation of Drug Therapy to Neutropenic States."

The following papers were read as a symposium on "Blood Dyscrasias":

Drs. E. M. Butt and A. M. Hoffman, Los Angeles: "Agranulocytosis Produced Experimentally in Dogs by the Feeding of Aminopyrine." No discussion.

Drs. Frank J. Heck and Byron E. Hall, Rochester, Minn.: "Leukemoid Reactions." Discussed by Drs. Harry A. Wyckoff, San Francisco; Nathan Rosenthal, New York, and Frank J. Heck, Rochester, Minn.

Dr. Joseph M. Hill, Dallas, Texas: "Red Cell Dimensions in Familial Hemolytic Anemia with Particular Reference to Atypical Cases." Discussed by Drs. Russell L. Haden, Cleveland; M. C. Riddle, Portland, Ore., and Joseph M. Hill, Dallas.

Dr. L. W. Diggs, Memphis, Tenn.: "The Erythrocyte in Sick Cell Anemia." Discussed by Drs. Edwin E. Osgood, Portland, Ore., and L. W. Diggs, Memphis, Tenn.

Dr. Israel Davidsohn, Chicago: "A Method of Differentiation of Blood Groups A₁ and A₂." Discussed by Drs. Harry Rosenthal, New York; Alvin G. Foord, Los Angeles, and Israel Davidsohn, Chicago.

Dr. James B. McNaught, San Francisco: "The Gordon Test for Hodgkin's Disease: A Reaction to Eosinophils." No discussion.

FRIDAY, JUNE 17—AFTERNOON

The following officers were elected: chairman, Dr. Maurice B. Visscher, Minneapolis; vice chairman, Dr. Frank W. Hartman, Detroit; secretary, Dr. J. J. Moore, Chicago; delegate, Dr. L. W. Larson, Bismarck, N. D.; alternate, Dr. J. J. Moore, Chicago; nominee to American Board of Pathology, Dr. Howard T. Karsner, Cleveland.

Dr. Philip B. Matz, Washington, D. C., read a paper on "Incidence of Primary Bronchiogenic Carcinoma." Discussed by Dr. Max Cutler, Chicago.

Drs. Alvin G. Foord and Paul A. Ferrier, Pasadena, Calif., presented a paper on "Primary Carcinoma of the Ureter." No discussion.

Drs. Harry C. Schmeisser and W. A. D. Anderson, Memphis, Tenn., presented a paper on "Solid Ovarian Tumors." Discussed by Drs. Alvin G. Foord, Pasadena, Calif.; Alfred S. Giordano, South Bend, Ind.; Elmer W. Smith, San Francisco, and Harry C. Schmeisser, Memphis, Tenn.

Dr. Robert C. Page, Tuckahoe, N. Y., read a paper on "Cytology of the Skin of Mice During Application of Carcinogenic Agents, Methylcholanthrene and Cholanthrene." Discussed by Drs. Philip B. Matz, Washington, D. C., and Robert C. Page, Tuckahoe, N. Y.

Drs. Henry C. Sweany and Rosalind Klaas, Chicago, presented a paper on "X-Ray Diffraction Analysis as Applied in Pneumoconiosis." No discussion.

Drs. Harry J. Corper and Maurice L. Cohn, Denver, presented a paper on "The Effects of Tuberculo-protein: A Quantitative Study." No discussion.

SECTION ON NERVOUS AND MENTAL DISEASES

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order at 9:15 by the chairman, Dr. Samuel D. Ingham, Los Angeles.

The following resolution was presented to the section by Dr. Tom B. Throckmorton, Des Moines, Iowa, as coming from Dr. Foster Kennedy, New York:

WHEREAS, State and federal legislation governing the control of reproduction is conflicting and renders certain phases of medical practice illegal, it is important that the profession of medicine as a whole should clarify and lead in these questions involving medical practice and procedures. The importance of such control in medical practice where such control constitutes a therapeutic measure is obvious to enlightened lay opinion throughout the civilized world and should be obvious to all medical men not mediocrally minded; therefore be it

Resolved, That we hereby recommend the alteration of existing laws wherever necessary, so that physicians may legally give contraceptive information to their patients; and be it further

Resolved, That we recommend an amendment to sections 211, 245, 311 and 312 of the Federal Penal Code as follows: "Standard medical and scientific journals and reprints therefrom and standard medical works which contain information regarding the prevention of conception are not nonmailable under this section"; and be it further

Resolved, That a full and frank discussion be given in regard to these subjects by a proper deliberative council of the American Medical Association.

On motion regularly made and seconded, the foregoing resolution was approved, to be transmitted to the House of Delegates.

Drs. L. H. Ziegler, Wauwatosa, Wis., and C. P. Sheldon, Boston, presented a paper on "Marriage Among the Mentally Retarded." Discussed by Drs. Dwight L. Wilbur, San Francisco; Lawrence Kolb, Lexington, Ky.; Fred O. Butler, Eldridge, Calif., and L. H. Ziegler, Wauwatosa, Wis.

Dr. Robert P. Knight, Topeka, Kan., read a paper on "The Psychoanalytic Treatment of Chronic Alcoholic Addiction in a Sanatorium." Discussed by Drs. F. G. Ebaugh, Denver; Karl A. Menninger, Topeka, Kan.; Edward J. Mayer, Pittsburgh; Herman S. Major, Kansas City, Mo., and Robert P. Knight, Topeka, Kan.

Dr. Samuel D. Ingham, Los Angeles, read the chairman's address, entitled "Some Neurologic Aspects of Psychiatry."

Dr. Richard M. Brickner, New York, read a paper on "A Follow-Up Report of a Human Being with Bilateral Frontal Lobectomy: Comparison with Cases of Unilateral Lobectomy." Discussed by Drs. W. F. Schaller, San Francisco; J. M. Nielsen, Los Angeles; Walter Freeman, Washington, D. C.; L. H. Ziegler, Wauwatosa, Wis., and Richard M. Brickner, New York.

Dr. Hans H. F. Recse, Madison, Wis., read a paper on "Clinical Observations and Results with Hypoglycemia and Convulsive Therapy in Schizophrenia."

Drs. Richard H. Young and G. Alexander Young, Omaha, presented a paper on "Treatment of the Psychoses with Hypoglycemia and Induced Convulsions."

These two papers were discussed by Drs. A. A. Low, Chicago; Titus H. Harris, Galveston, Texas; A. E. Bennett, Omaha; Emerick Friedman, Greenwich, Conn.; George W. Hall, Chicago; Eugene Ziskind, Los Angeles; Harold E. Himwich, Albany, N. Y., and Hans H. F. Reese, Madison, Wis.

THURSDAY, JUNE 16—MORNING

Drs. Olof Larsell and Robert S. Dow, Portland, Ore., presented a paper on "The Cerebellum: A New Interpretation." Discussed by Drs. Frederick L. Reichert, San Francisco; Webb E. Haymaker, San Francisco, and Olof Larsell, Portland, Ore.

Dr. K. G. McKenzie, Toronto, Canada, read a paper on "The Present Status of a Patient Who Has Had the Right Cerebral Hemisphere Removed." Discussed by Drs. Max M. Peet, Ann Arbor, Mich.; Henry R. Viets, Boston; Richard M. Brickner, New York; Paul C. Bucy, Chicago; Walter Freeman, Washington, D. C.; A. L. Skoog, Kansas City, Mo., and K. G. McKenzie, Toronto, Canada.

Dr. W. J. Gardner, Cleveland, read a paper on "Cerebral Pseudo-Tumor and Pseudo-Abscess." Discussed by Drs. Harry Wilkins, Oklahoma City; R. B. Raney, Los Angeles; Max M. Peet, Ann Arbor, Mich.; J. M. Nielson, Los Angeles; George W. Hall, Chicago; O. W. Jones Jr., San Francisco, and W. J. Gardner, Cleveland.

Dr. R. E. Semmes, Memphis, Tenn., read a paper on "Intracranial Arteriovenous Varices with Brief Report of Ten Cases of Different Types and Special Reference to Treatment by Ligation." Discussed by Drs. Hale A. Haven, Seattle; E. B. Towne, San Francisco, and R. E. Semmes, Memphis, Tenn.

Drs. W. McK. Craig and J. W. Kernohan, Rochester, Minn., presented a paper on "Tumors of the Fourth Ventricle."

Drs. D. N. Buchanan and Percival Bailey, Chicago, presented a paper on "Brain Tumors in Infancy and Childhood."

These two papers were discussed by Drs. F. R. Teachenor, Kansas City, Mo.; Delbert H. Werden, San Diego, Calif.; Francis C. Grant, Philadelphia; W. McK. Craig, Rochester, Minn., and D. N. Buchanan, Chicago.

FRIDAY, JUNE 17—MORNING

The following officers were elected: chairman, Francis C. Grant, Philadelphia; vice chairman, Richard M. Brickner, New York; secretary, Paul C. Bucy, Chicago; executive committee: Henry R. Viets, Boston; Samuel D. Ingham, Los Angeles, and Francis C. Grant, Philadelphia; delegate, Tom B. Throckmorton, Des Moines, Iowa; alternate, Edward J. Delehanty, Denver; representative on American Board of Psychiatry and Neurology, Titus H. Harris, Galveston, Texas; representative to Scientific Exhibit, Roland P. Mackay, Chicago.

Dr. Tom B. Throckmorton, Des Moines, Iowa, delegate to the House, made a report on the session of the House of Delegates, which was accepted.

It was voted that a letter of congratulations be sent to Dr. Rock Sleyster, Wauwatosa, Wis., President-Elect.

Dr. A. E. Bennett, Omaha, read a paper on "Horse Serum Neuritis." Discussed by Drs. Foster Kennedy, New York; Walter Freeman, Washington, D. C.; John B. Doyle, Los Angeles; Hyman I. Vener, Los Angeles; Henry R. Viets, Boston; Tom B. Throckmorton, Des Moines, Iowa; Leopold Brahdy, New York; L. H. Ziegler, Wauwatosa, Wis., and A. E. Bennett, Omaha.

Dr. Josephine B. Neal, New York, read a paper on "The Treatment of Acute Infections of the Central Nervous System with Sulfanilamide." Discussed by Drs. R. Cannon Eley, Boston; Henry W. Woltman, Rochester, Minn., and Josephine B. Neal, New York.

Dr. R. P. Mackay, Chicago, read a paper on "Chronic Adhesive Spinal Arachnoiditis: A Clinical and Pathologic Study." Discussed by Drs. John B. Doyle, Los Angeles; J. M. Nielsen, Los Angeles, and R. P. Mackay, Chicago.

Drs. H. H. Merriitt and T. J. Putnam, Boston, presented a paper on "Clinical Experiences with Diphenylhydantoin: A New Anticonvulsant Drug." Discussed by Drs. Eugene Ziskind, Los Angeles; Burt R. Shurly, Detroit, and T. J. Putnam, Boston.

Dr. William J. German Jr., New Haven, Conn., read a paper on "Results of Removal of Cerebral Cortical Scars."

Drs. Leonard T. Furlow and Ernest Sachs, St. Louis, presented a paper on "Subpial Resection of the Cerebral Cortex for Focal Epilepsy: Further Observations."

These two papers were discussed by Drs. R. Glen Spurling, Louisville, Ky.; William J. German Jr., New Haven, Conn., and Leonard T. Furlow, St. Louis.

SECTION ON DERMATOLOGY AND SYPHILOLOGY

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order at 9:05 by the chairman, Dr. Joseph V. Klauder, Philadelphia.

Dr. Howard Fox, New York, read the report of the Committee on American Academy of Dermatology and Syphilology: "At the last meeting of this section on June 11, 1937, the chairman, Dr. O'Leary, appointed a committee of seven with myself as chairman to study the formation of an American Academy of Dermatology and Syphilology. The committee met in Chicago on Sept. 10, 1937, a time that was also chosen for the meeting of the organizing committee of the International Congress. This offered an unusual opportunity for a large group of dermatologists representing all parts of the country to meet and discuss the proposed American Academy. Accordingly, with the consent of Dr. O'Leary, the committee was enlarged to include the members of the congress committee, making a total of seventeen. A meeting of this enlarged committee was held and it was unanimously agreed that the proposed academy should be formed in the near future.

"The meeting of the Central States Dermatological Society in Detroit on January 14 afforded an opportunity for a large number of dermatologists to get together and form the new academy. At this meeting, which was attended by 300 dermatologists, a constitution was adopted and the American Academy of Dermatology and Syphilology was organized. Further details of this inaugural meeting have been published in the *Archives of Dermatology and Syphilology* and in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*."

Dr. Oliver S. Ormsby, Chicago, reported that the joint committee of the American Dermatological Association and the Section on Dermatology and Syphilology of the American Medical Association to make preparations for the International Congress on Dermatology and Syphilology had organized and elected Dr. Paul A. O'Leary, Rochester, Minn., secretary general. Dr. O'Leary supplemented the report with an outline of the plans for the congress to be held Sept. 9, 1940, at the Waldorf-Astoria in New York. Dr. Elmore B. Tauber, Cincinnati, further amplified the report with respect to the arrangements for financing the congress.

Dr. C. Guy Lane, Boston, read the following report of the American Board of Dermatology and Syphilology: "At the examination of the board last year in Philadelphia ninety-five applicants for certificates were considered; seventy-seven were examined (twelve of these for reexamination); fifty-one passed, twelve failed and fourteen were conditioned in one or more subjects. Certificates were awarded to the fifty-one candidates who completed the examination satisfactorily, so that diplomates of the board now number 383. During the past year a new booklet of information has been issued, a booklet on opportunities for graduate training has been revised and published, and a new issue of the Registry prepared, with both alphabetical and geographic sections. The syllabus is still in the process of revision. In February there was a meeting of the Advisory Board for Medical Specialties in which representatives of this board participated. Representatives of the twelve boards already formed, and other agencies interested in graduate medical education, discussed numerous questions. Among the most important were the following: (1) Further boards will probably be made subsidiaries of one of the existing boards; (2) a Commission on Graduate Medical Education has been formed and funds obtained for a three year study of educational facilities for graduate medical study; (3) the question of certification by more than one board was discussed, but the Advisory Board opposed multiple certification; (4) the assessment for the various participating bodies was reduced; (5) effective date of special training requirements was advanced to

Jan. 1, 1942. The authorities of the American Medical Association protest very strongly against the meeting of the various boards at the time of the A. M. A. meeting, so that it seems probable that the time of the board examination will be changed to coincide with the meeting of the new American Academy of Dermatology and Syphilology. It also seems probable that representation of the academy on the board should be arranged."

Dr. Harry R. Foerster, Milwaukee, chairman of the nominating committee, offered for the committee the name of Dr. Charles C. Dennie, Kansas City, Mo., to succeed himself on the American Board of Dermatology and Syphilology. The nomination was seconded and Dr. Dennie was unanimously elected.

Dr. Stefan Rothman, Budapest, Hungary, was presented by the chairman and invited to participate in the discussions.

Dr. Howard Fox, New York, presented the following report with regard to the *Archives of Dermatology and Syphilology*: "I want to thank the members of the section for their very kind cooperation in my efforts to run the *Archives* as well as I could, and I am also indebted to the other members of the editorial board for reviewing certain very technical articles. The Transactions, as Dr. Pusey used to say, constitute the most difficult problems of the *Archives*, and I certainly feel that way myself. There has been, I am glad to say, considerable improvement recently in the Transactions, largely due to the work of either the secretaries or small editorial boards that have been appointed by the individual societies, but with the improvement in the substance of the Transactions there has been unfortunately a delay and they have been slower than usual in reaching my office. I hope that you will do all you can in the future to speed up these Transactions, because otherwise I expect to spend the entire summer correcting them. It is going to be possible in the future to have photographic illustrations of cases and histopathologic cuts in the Transactions. I think that will greatly increase the value of the Transactions. In the preparation of manuscripts I would certainly urge every author, whether he writes an elaborate paper or merely reports a case in one of the societies, to become familiar with the book known as Medical Writing, by Dr. Fishbein. It contains certain rules and regulations that seem arbitrary but really are not so, and it contains a lot of valuable information about the preparation of manuscripts which will help you greatly, and I am sure if you follow these suggestions it will help the editor."

As chairman of the Advisory Committee on Syphilis Control, Dr. Paul A. O'Leary, Rochester, Minn., read the following letter from Dr. Thomas Parran, Surgeon General, United States Public Health Service, dated May 17, 1938:

I have learned from several sources that some of the dermatosyphilologists of the United States are of the opinion that the Public Health Service intends to utilize the services of specialists in internal medicine and other specialists in the field of medicine to the exclusion of dermatologists in the present campaign against syphilis. There is no intention to divorce syphilology from dermatology.

The syphilis problem in the United States is an enormous one, and I can assure you that the services of both dermatosyphilologists and internists will be required. Indeed, so prevalent is syphilis that it is my opinion that the aid of all general practitioners will be needed in addition to the special assistance of experts in the field.

The action of your committee in endorsing the campaign to control syphilis about a year ago was most encouraging. I hope that it will be possible to depend on you and the members of your Association in the prosecution of this important work in the future.

Dr. Joseph V. Klauder, Philadelphia, read the chairman's address, entitled "Erysipeloid as an Occupational Disease."

The following papers were read as a symposium on "Occupational Dermatoses":

Dr. C. Guy Lane, Boston: "Occupational Dermatoses: An Educational Program."

Dr. Louis Schwartz, New York: "The Incidence of Occupational Dermatoses and Their Causes in the Basic Industries."

Drs. Marion B. Sulzberger, New York, and Clark W. Finnerud, Chicago: "Industrial Dermatoses: Remarks on Criteria for Diagnosis."

Drs. Earl D. Osborne and James W. Jordon, Buffalo: "The Practical Aspect of the Prevention of Industrial Dermatoses."

Dr. John G. Downing, Boston: "Analysis of Claims in Industrial Dermatoses."

Dr. Harry R. Foerster, Milwaukee: "The Compensation Laws and Related Medicolegal Considerations of Industrial Dermatoses."

These six papers were discussed by Drs. Charles C. Dennie, Kansas City, Mo.; Cleveland J. White, Chicago; Hiram E. Miller, San Francisco; Stefan Rothman, Budapest, Hungary; J. Harper Blaisdell, Boston; Howard J. Parkhurst, Toledo, Ohio; Elmore B. Tauber, Cincinnati; Joseph V. Klauder, Philadelphia; M. T.-R. Maynard, San Jose, Calif.; Joseph Grindon, St. Louis; Eugene F. Traub, New York; C. Guy Lane, Boston; Louis Schwartz, New York; Clark W. Finnerud, Chicago; Earl D. Osborne, Buffalo; John G. Downing, Boston, and Harry R. Foerster, Milwaukee.

It was voted, on motion of Dr. Elmore B. Tauber, Cincinnati, that the papers in this symposium be published as a group.

THURSDAY, JUNE 16—MORNING

Dr. Clark W. Finnerud, Chicago, chairman of the Committee on Scientific Exhibit, presented the report of the committee as follows:

Dr. Fishbein tells me that it has come to his attention repeatedly in recent years that many individuals come to the annual meeting not to attend the scientific section meetings but to spend their full time in the Scientific Exhibit. He feels, as do most of the other officers, that it is really the most important part of the annual meeting. In our section, which was so ably built up by Dr. Weidman, things which he adopted have been copied by the various sections. This year our exhibit has been largely a practical one. We are handicapped by the fact that we are so far from the East this year, although the California exhibits have been exceptionally fine; we have been limited for space and have had to cut down considerably on the number of exhibits, and those who have been given space had to cut down to a minimum; our exhibit is not so neat as usual, but I think you will agree that any one who is willing to spend two or three hours there will find a world of instruction available, particularly in the industrial dermatoses portion, although everything else is very well illustrated. From the standpoint of instruction we really feel this year's exhibit has been very much worth while.

I presume you all feel, as I do, that the section should go along as in past years with this phase of the activities.

Dr. Downing said yesterday that the finest way to learn about any subject is to put on an exhibit in it or to prepare a paper on it. Dr. O'Leary remarked that a tremendous amount of interest centers around the exhibits illustrated with slides and particularly colored slides, and more especially colored motion pictures. I would predict that in the future there will tend to be more and more exhibits of that nature.

Our bank account is in a thoroughly healthy state owing to some financial aid annually, about \$25 a year, from the American Medical Association. We have a balance of \$88.76, which is, I think, approximately \$58 less than was turned over to me by Dr. Weidman in 1935.

The chairman appointed Drs. Harold N. Cole, Cleveland, Elmore B. Tauber, Cincinnati, and Howard Fox, New York, a committee to audit the books of the Committee on Scientific Exhibit.

The chairman called for reports from the Committees on Cosmetics and Industrial Dermatoses. There were no reports from these committees.

Dr. Earl D. Osborne, Buffalo, announced the dates of the meeting of the Academy of Dermatology and Syphilology as Nov. 14-15, 1938, at the Jefferson Hotel, St. Louis, and outlined the program.

Dr. Earl D. Osborne, Buffalo, as the section representative on the Council on Industrial Health of the American Medical Association, urged the members to answer questionnaires and to cooperate with the Council in its endeavor to formulate a compendium of industrial conditions.

Dr. C. Guy Lane, Boston, presented the following report of the Committee on Industrial Dermatoses:

At the meeting last year it was announced that the Council on Industrial Health had been authorized by the Trustees of the Association. This Council has been appointed and has organized. Dr. Earl D. Osborne has been appointed as the

representative of dermatology and has been active in this organization. A broad program has been outlined, and with the resources of the A. M. A. it is possible to see great progress in this subject in the next few years. The recommendation of this committee for a symposium has been carried out in this section and at the American Dermatological Association meeting, and an attempt will be made to have these papers published together as a separate monograph or perhaps as a supplement to the *Archives*. The matter of definitions and criteria are of major importance and will be carefully considered by this committee with a view to making a report to the section next year.

For the future the committee plans to cooperate with the new Council on Industrial Health in every possible way and to continue the development of subcommittees interested in this phase of Dermatology.

C. GUY LANE.
HARRY R. FOERSTER.
JOHN G. DOWNING.
CHARLES C. DENNIE.
MARION B. SULZBERGER.

Dr. Harold N. Cole, Cleveland, reported that the auditing committee had examined the books of the Committee on Scientific Exhibit and found them in order.

Dr. Reuben L. Kahn, Ann Arbor, Mich., read a paper entitled "Are There Paradoxical Serum Reactions in Syphilis?" Discussed by Drs. Frederick G. Novy Jr., Oakland, Calif.; Paul A. O'Leary, Rochester, Minn.; Stefan Rothman, Budapest, Hungary; William H. Goeckerman, Los Angeles; Harry M. Robinson Sr., Baltimore; Joseph V. Klauder, Philadelphia, and Reuben L. Kahn, Ann Arbor, Mich.

Drs. Donald M. Pillsbury and H. Harris Perlman, Philadelphia, presented a paper on "Acetarsone Therapy in 187 Cases of Prenatal Syphilis."

Drs. Harry M. Robinson and Harry M. Robinson Jr., Baltimore, presented a paper on "Acetarsone Orally in the Treatment of Acquired Syphilis in Adults."

These two papers were discussed by Drs. Harold N. Cole, Cleveland; Charles C. Dennie, Kansas City, Mo.; George V. Kulchar, San Francisco; W. Ray Jones, Seattle; Donald M. Pillsbury, Philadelphia, and Harry M. Robinson, Baltimore.

Drs. Torald H. Sollmann, Harold N. Cole, Katharine I. Henderson, Garrett A. Cooper, W. R. Love and W. F. Schwartz, Cleveland, presented a paper on "Combination Courses of Bismuth Administration." Discussed by Drs. George V. Kulchar, San Francisco; P. J. Hanzlik, San Francisco; Ben A. Newman, Los Angeles; Joseph Grindon, St. Louis; Harry M. Robinson, Baltimore; Elmore B. Tauber, Cincinnati, and Harold N. Cole, Cleveland.

Dr. Samuel Goldblatt, Cincinnati, read a paper on "Neurosyphilis in the Negro: Spinal Fluid Manifestations in Untreated and Treated Cases." Discussed by Drs. Marque O. Nelson, Tulsa, Okla.; Edward L. Merritt, Fall River, Mass.; Arthur A. Herold, Shreveport, La., and Samuel Goldblatt, Cincinnati.

Drs. Paul A. O'Leary, Rochester, Minn., Harold N. Cole, Cleveland, Joseph Earle Moore, Baltimore, John H. Stokes, Philadelphia, Udo J. Wilc, Ann Arbor, Mich., Thomas Parran, R. A. Vonderlehr and Lida J. Usilton, Washington, D. C., presented a paper on "Takes Dorsalis: Cooperative Clinical Studies in the Treatment of Syphilis." Discussed by Dr. Stefan Rothman, Budapest, Hungary.

FRIDAY, JUNE 17—MORNING

The following officers were elected: chairman, Bedford Shelmire, Dallas, Texas; vice chairman, Robert C. Jamieson, Detroit; secretary, C. F. Lehmann, San Antonio, Texas; delegate, Clyde Cumner, Cleveland; alternate, Harold N. Cole, Cleveland; Scientific Exhibit Committee chairman, Hamilton Montgomery, Rochester, Minn.; Charles C. Dennie, Kansas City, Mo., American Board of Dermatology and Syphilology (elected Wednesday).

It was voted to send a message to Dr. Howard Morrow, San Francisco, regretting his absence, wishing him a speedy recovery, and congratulating him on his election as Vice President of the American Medical Association.

The chairman conveyed to the members for Dr. Schwartz his appreciation for their cooperation in the exhibit, which received the certificate, and his request for their continued support.

Dr. Henry A. Brunsting, Toledo, Ohio, read a paper on "Hidrosadenitis Suppurativa, Abscess of the Apocrine Sweat Glands: A Study of the Clinical and Pathologic Features, with a Report of Twenty-Two Cases and a Review of the Literature." Discussed by Drs. William H. Goeckerman, Los Angeles; Donald M. Pillsbury, Philadelphia, and Henry A. Brunsting, Toledo, Ohio.

Dr. Duncan O. Poth, San Antonio, Texas, read a paper on "Tumor-like Keratoses." Discussed by Drs. H. J. Templeton, Oakland, Calif.; R. H. Crockett, San Antonio, Texas; C. F. Lehmann, San Antonio, Texas; M. T.-R. Maynard, San Jose, Calif.; James H. Mitchell, Chicago; Fred D. Weidman, Philadelphia; W. F. Spiller, Galveston, Texas, and Duncan O. Poth, San Antonio, Texas.

Dr. Fred D. Weidman, Philadelphia, read a paper on "Acute Urticaria Polycythemia with Positive Oxidase Reaction in Sections and in Lesions in Situ." Discussed by Drs. J. Gardner Hopkins, New York; Joseph V. Klauder, Philadelphia; R. H. Crockett, San Antonio, Texas; Jesse Ettelson, Portland, Ore., and Fred D. Weidman, Philadelphia.

Dr. John F. Madden, St. Paul, read a paper on "Cholesterol Studies and Low Fat Diet in Psoriasis." Discussed by Drs. Richard J. Bailey, Spokane, Wash.; George V. Kulchar, San Francisco, and John F. Madden, St. Paul.

Drs. Carl W. Laymon and Harry A. Cumming, Minneapolis, presented a paper on "Sensitivity of the Skin to X-Rays Following the Ingestion of Arsenic." Discussed by Drs. W. H. Guy, Pittsburgh; Donald M. Pillsbury, Philadelphia, and Carl W. Laymon, Minneapolis.

Dr. J. W. Tedder, New Orleans, read a paper on "Sulfanilamide Dermatitis." Discussed by Drs. Marcus B. Caro, Chicago; Stephan Epstein, Marshfield, Wis.; Ben A. Newman, Los Angeles, and J. W. Tedder, New Orleans.

On motion of Dr. Harold N. Cole, Cleveland, a vote of appreciation was passed for the very successful meeting and the hospitality of the San Francisco members.

An expression of appreciation was extended to the retiring officers for their efforts and for the interesting program.

SECTION ON PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH

WEDNESDAY, JUNE 15—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr. Robert T. Legge, Berkeley, Calif.

Dr. Robert T. Legge, Berkeley, Calif., read the chairman's address, entitled "Industrial Medicine of Tomorrow."

Drs. R. R. Sayers and J. J. Bloomfield, Washington, D. C., presented a paper on "Public Health Aspects of Industrial Hygiene." Discussed by Drs. L. D. Bristol, New York; H. W. Gibbons, Sacramento, Calif., and R. R. Sayers, Washington, D. C.

Dr. R. T. Johnstone, Los Angeles, read a paper on "Industrial Medicine's Challenge to the Internist." Discussed by Drs. Leopold Brahdly, New York; Dwight O'Hara, Boston; August F. Knocfel, Terre Haute, Ind., and A. T. McCormack, Louisville, Ky.

Dr. A. G. Kammer, Indiana Harbor, East Chicago, Ind., read a paper on "Medical Supervision of Benzene Plant Workers." Discussed by Drs. Peter K. Knocfel, Louisville, Ky.; R. R. Sayers, Washington, D. C.; J. M. McCullough, Crockett, Calif., and A. G. Kammer, Indiana Harbor, East Chicago, Ind.

Dr. Carey P. McCord, Detroit, read a paper on "Noise and Its Effects on Human Beings." Discussed by Drs. Vern O. Knudsen, Los Angeles; Leopold Brahdly, New York, and Carey P. McCord, Detroit.

THURSDAY, JUNE 16—AFTERNOON

Dr. R. H. Riley, Baltimore, read a paper on "Maryland's Program for the Control of Tuberculosis." Discussed by Drs.

Frank L. Kelly, Berkeley, Calif.; Jesse D. Cook, Olive View, Calif.; Roy L. Cleere, Denver; Robert E. Plunkett, Troy, N. Y., and R. H. Riley, Baltimore.

Dr. Louis Cohen, Philadelphia, read a paper on "Hematogenous Tuberculosis and Silicosis." Discussed by Drs. Philip J. Hodes, Philadelphia; Frederick Slyfield, Seattle; Philip H. Pierson, San Francisco; Jacob Gershon-Cohen, Philadelphia, and Louis Cohen, Philadelphia.

Dr. Nina Simmonds, San Francisco, read a paper on "Recent Researches in Nutrition in Relation to Preventive Medicine." Discussed by Drs. M. J. Rosenau, Chapel Hill, N. C.; W. A. Sawyer, Rochester, N. Y.; L. D. Bristol, New York, and Nina Simmonds, San Francisco.

Dr. Charles Armstrong, Washington, D. C., read a paper on "Studies of the Mechanism of Intranasal Infections." Discussed by Drs. Edwin William Schultz, Stanford University, Calif.; Irving J. Wolman, Philadelphia, and Charles Armstrong, Washington, D. C.

Dr. Edward S. Rogers, Albany, N. Y., read a paper on "Two and One-Half Years of Pneumonia Control in New York State." Discussed by Drs. Peter Irving, New York; G. M. Ekwurzel, San Francisco, and Edward S. Rogers, Albany, N. Y.

Drs. H. S. Diehl, A. B. Baker and Donald W. Cowan, Minneapolis, presented a paper on "Cold Vaccines: An Evaluation Based on a Controlled Study." Discussed by Drs. W. A. Sawyer, Rochester, N. Y.; L. D. Bristol, New York; Robert K. Cutter, Berkeley, Calif., and H. S. Diehl, Minneapolis.

FRIDAY, JUNE 17—AFTERNOON

The following officers were elected: chairman, Dr. I. C. Riffin, Richmond, Va.; vice chairman, Dr. H. S. Diehl, Minneapolis; secretary, Dr. W. A. Sawyer, Rochester, N. Y.; executive committee: Dr. L. D. Bristol, New York; Dr. Robert T. Legge, Berkeley, Calif., and Dr. I. C. Riffin; delegate, Dr. Stanley H. Osborn, Hartford, Conn.; Dr. R. R. Sayers, Washington, D. C.

Dr. W. P. Shepard, San Francisco, introduced the following resolution, which on motion, duly seconded, was adopted:

WHEREAS, The Section on Preventive and Industrial Medicine and Public Health has had a most profitable and enjoyable session, with excellent facilities for our purposes, and every effort has been put forth to insure our comfort and the success of our meeting; be it

Resolved, That we express our gratitude to the Honorable Mayor of San Francisco, Angelo J. Rossi, and to the Director of Health of San Francisco, Dr. Jacob C. Geiger, for their hospitality and generosity.

Dr. W. P. Shepard, San Francisco, introduced the following resolution, which on motion, duly seconded, was adopted:

WHEREAS, The professional medical fields represented in this section are subject to rapid and increasing changes at this time; and

WHEREAS, The section is composed of three separate and distinct fields of specialization; and

WHEREAS, The American Medical Association has recently formed a Council on Industrial Health, with which this section will wish to work in close cooperation; be it

Resolved, That it is the sense of this section that the section delegate and alternate to the House of Delegates should hereafter serve not more than two terms, totaling four years.

Dr. Ernest C. Dickson, San Francisco, read a paper on "Coccidioidomycosis: The Preliminary Acute Infection with Fungus Coccidioides." Discussed by Drs. K. F. Meyer, San Francisco; Kenneth H. Abbott, Ontario, Calif., and Ernest C. Dickson, San Francisco.

Dr. W. M. Dickie, Berkeley, Calif., read a paper on "Health of the Migrant." Discussed by Drs. Myrnie A. Gifford, Bakersfield, Calif.; A. T. McCormack, Louisville, Ky.; Mary C. Baldwin, Riverside, Calif.; Peter Cohen, Santa Maria, Calif., and W. M. Dickie, Berkeley, Calif.

Dr. Henry A. Luce, Detroit, read a paper on "The Next Great Battle for Soldiers of Medicine." Discussed by Drs. J. N. Baker, Montgomery, Ala., and A. T. McCormack, Louisville, Ky.

Dr. James Houlouse, Long Beach, Calif., read a paper on "The Contribution of Mental Hygiene to Education on the Elementary Level." Discussed by Dr. Frank E. Sawyer, Oakland, Calif.

Dr. Forrest N. Anderson, Los Angeles, read a paper on "Some Physiologic Concepts in Mental Hygiene." Discussed by Dr. L. D. Bristol, New York.

SECTION ON UROLOGY

WEDNESDAY, JUNE 15—AFTERNOON

The meeting was called to order at 2:05 by the chairman, Dr. Albert J. Scholl, Los Angeles.

The chairman appointed Dr. H. C. Bumpus Jr., Pasadena, Calif., to act on the executive committee in the absence of Dr. W. E. Walther, New Orleans.

Dr. E. Perry McCullagh, Cleveland, read a paper on "Treatment of Testicular Deficiency with Testosterone Propionate." Discussed by Drs. H. L. Kretschmer, Chicago; George G. Reinle, Oakland, Calif.; R. V. Day, Los Angeles; L. F. Hawkins, Brainerd, Minn., and E. Perry McCullagh, Cleveland.

Drs. C. F. Schroeder, Wyandotte, Mich., and R. E. Cumming, Detroit, presented a paper on "Resection of the Superior Hypogastric Plexus and the Sacral Sympathetic Ganglions for the Relief of Bladder Pain." Discussed by Drs. Alexander B. Hepler, Seattle; J. C. Negley, Glendale, Calif.; Reed M. Nesbit, Ann Arbor, Mich., and C. F. Schroeder, Wyandotte, Mich.

The following papers were read as a "Symposium on Preliminary Investigation and Treatment of Prostatic Obstruction":

Dr. Harold C. Habein, Rochester, Minn.: "Obstruction in the Neck of the Bladder: Criteria of Operability."

Reed M. Nesbit, Ann Arbor, Mich.: "Some Refinements in the Technic of Transurethral Prostatectomy."

Edwin Davis, Omaha: "Prostatectomy or Transurethral Prostatic Resection? A Plea for the Selectionist."

These three papers were discussed by Drs. H. C. Bumpus Jr., Pasadena, Calif.; Alfred I. Folsom, Dallas, Texas; Sidney Olsen, San Francisco; B. H. Hager, Los Angeles; N. G. Alcock, Iowa City; A. B. Cecil, Los Angeles; Harold C. Habein, Rochester, Minn., and Edwin Davis, Omaha.

Drs. Robert V. Day and Harry W. Martin, Los Angeles, presented a paper on "Vesical Diverticulum: A Feature Study."

Dr. George W. Fish, New York, read a paper on "Large Solitary Serous Cysts of the Kidney."

These two papers were discussed by Drs. Alfred I. Folsom, Dallas, Texas; T. Leon Howard, Denver; Thomas E. Gibson, San Francisco, and Robert V. Day, Los Angeles.

THURSDAY, JUNE 16—AFTERNOON

The secretary, Dr. William P. Herbst, Washington, D. C., read a report from the American Board of Urology, a communication from the Commission on Graduate Medical Education, and a communication from the Council on Industrial Health.

The meeting was called to order at 2:15 by the chairman, Dr. Albert J. Scholl, Los Angeles.

Drs. Stanley R. Woodruff, Jersey City, N. J., and Arthur H. Milbert, New York, presented a paper on "The Significance of Roentgenographic Studies of the Urinary Tract During and After Pregnancy." Discussed by Drs. Clarence G. Bandler, New York, and George C. Prather, Boston.

Dr. Albert J. Scholl, Los Angeles, read the chairman's address, entitled "Urologic Conditions Resembling Chronic Glomerulonephritis."

The following papers were read as a symposium on "Non-specific and Gonococcal Infections of the Urinary Tract":

Dr. Anson L. Clark, Oklahoma City: "Sulfanilamide Therapy in Nonspecific Infections of Urinary Tract."

Drs. Bernard Silver and H. Manning Elliott, Los Angeles: "The Treatment of Gonorrhea with Sulfanilamide."

Dr. John H. Morrissey, New York: "Surgical Procedures in the Treatment of Complications in Gonorrhea."

These three papers were discussed by Drs. A. Elmer Belt, Los Angeles; James R. Dillon, San Francisco; W. Ray Jones, Seattle; Wirt B. Dakin, Los Angeles, and Henry Helmholtz, Rochester, Minn.

Drs. John L. Emmett and John M. Kibler, Rochester, Minn., presented a paper on "Surgical Indications in Renal Tuberculosis." Discussed by Drs. John R. Hand, Portland, Ore.; Frederick Lieberthal, Chicago; J. C. Negley, Los Angeles, and William P. Herbst, Washington, D. C.

FRIDAY, JUNE 17—AFTERNOON

The following officers were elected: chairman, Dr. William P. Herbst, Washington, D. C.; vice chairman, Dr. Grayson Carroll, St. Louis; secretary, Dr. Vincent J. O'Connor, Chicago; certification board member, Dr. T. Leon Howard, Denver; delegate, Dr. H. C. Bumpus Jr., Pasadena, Calif.; alternate, Dr. George G. Reinle, Oakland, Calif.

Dr. John K. Ormond, Detroit, read a paper on "Torsion of the Testicle." Discussed by Drs. Roger W. Barnes, Los Angeles; James A. May, San Diego, Calif., and John K. Ormond, Detroit.

Dr. Duncan M. Morison, Edinburgh, Scotland, read a paper on "Routes of Absorption in Total Ureteral Obstruction: Some Further Observations." Discussed by Drs. Frank Hinman, San Francisco; Charles P. Mathe, San Francisco, and Duncan M. Morison, Edinburgh, Scotland.

The following papers were read as a symposium on "Genito-Urinary Malignant Neoplasms":

Dr. Hugh Cabot, Rochester, Minn.: "Neoplasms of the Testis: A Study of the Results of Orchidectomy With and Without Irradiation."

Dr. Henry G. Bugbee, New York: "Surgery of Genito-Urinary Malignancy."

These two papers were discussed by Drs. George C. Prather, Boston; Clark M. Johnson, San Francisco; A. Elmer Bclt, Los Angeles, and Hugh Cabot, Rochester, Minn.

Dr. Norman W. Roome, Chicago, read a paper on "The Visualization of the Adrenal Glands by Air Injection." Discussed by Dr. George W. Fish, New York.

SECTION ON ORTHOPEDIC SURGERY

WEDNESDAY, JUNE 15—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr. John Dunlop, Pasadena, Calif.

On motion regularly made and seconded, Dr. Henry W. Meyerding, Rochester, Minn., was elected delegate to the House of Delegates.

Dr. George A. L. Inge, New York, read a paper on "Synovectomy of the Knee Joint for Chronic Arthritis." Discussed by Drs. David H. Kling, Los Angeles; J. Albert Key, St. Louis, and George A. L. Inge, New York.

Dr. Henry W. Meyerding, Rochester, Minn., read a paper on "Spondylolisthesis: An Etiologic Factor in Backache." Discussed by Drs. Sylvan L. Haas, San Francisco; Charles LeRoy Lowman, Los Angeles; J. Albert Key, St. Louis, and Henry W. Meyerding, Rochester, Minn.

Drs. C. C. Coleman, Richmond, Va., and J. M. Meredith, University, Va., presented a paper on "Treatment of Fracture-Dislocation of the Spine Associated with Cord Injury." Discussed by Drs. Frederic C. Bost, San Francisco, and C. C. Coleman, Richmond, Va.

The following were appointed as a nominating committee: Dr. J. Albert Key, St. Louis, chairman; Dr. Walter G. Stern, Cleveland, and Dr. Jesse T. Nicholson, Philadelphia.

Dr. George J. Garceau, Indianapolis, read a paper on "Fractures of the Lower End of the Humerus." Discussed by Drs. J. H. Dorman, Dallas, Texas; H. W. Spiers, Los Angeles; J. Albert Key, St. Louis; Hugh T. Jones, Los Angeles; Steele F. Stewart, Los Angeles, and George J. Garceau, Indianapolis.

Dr. Charles Murray Gratz, New York, read a paper on "Fascial Adhesions in Low Back Pain and Arthritis." Discussed by Drs. Millard C. Beyer, Akron, Ohio; David R. Telson, Brooklyn; J. Albert Key, St. Louis, and Charles Murray Gratz, New York.

Dr. Steele F. Stewart, Los Angeles, read a paper on "Relation Between Birth Injuries and the Obstetric History." Discussed by Drs. Oscar L. Miller, Charlotte, N. C.; J. Albert Key, St. Louis, and Walter G. Stern, Cleveland.

THURSDAY, JUNE 16—AFTERNOON

Dr. Charles F. Nelson, Beverly Hills, Calif., read a paper on "Factors to be Considered in Bone Metabolism, with Suggestions as to the Clinical Value of Vitamin D and Parathyroid Extract."

Discussed by Drs. J. Albert Key, St. Louis; Harold E. Crowe, Los Angeles, and Charles F. Nelson, Beverly Hills, Calif.

Dr. Philip Lewin, Chicago, read a paper on "Newer Trends in Teaching Orthopedic Surgery." Discussed by Drs. J. Albert Key, St. Louis; Earl D. McBride, Oklahoma City, and Philip Lewin, Chicago.

Dr. John Dunlop, Pasadena, Calif., read the chairman's address, entitled "Transcondylar Fractures of the Humerus in Childhood."

Dr. Earl D. McBride, Oklahoma City, read a paper on "The Use of Absorbable Metal in Bone Surgery." Discussed by Drs. Charles Scott Venable, San Antonio, Texas; J. Albert Key, St. Louis, and Earl D. McBride, Oklahoma City.

Dr. C. Fred Ferciot, Lincoln, Neb., read a paper on "Dashboard Fractures of the Patella." Discussed by Drs. G. Masser Taylor, Los Angeles; August F. Knoefel, Terre Haute, Ind.; David R. Telson, Brooklyn; John Dunlop, Pasadena, Calif., and C. Fred Ferciot, Lincoln, Neb.

FRIDAY, JUNE 17—AFTERNOON

Dr. Roland Hammond, Providence, R. I., presented the report of the delegate to the House of Delegates, Dr. Henry W. Meyerding, Rochester, Minn., which was accepted.

The following officers were elected: chairman, Oscar L. Miller, Charlotte, N. C.; vice chairman, Robert V. Funsten, Charlottesville, Va.; secretary, Guy A. Caldwell, New Orleans; executive committee: Fremont A. Chandler, Chicago; John Dunlop, Pasadena, Calif., and Oscar L. Miller, Charlotte, N. C.; delegate, Willis C. Campbell, Memphis, Tenn.; alternate, Edwin W. Ryerson, Chicago. The present members of the American Board of Orthopedic Surgery, Willis C. Campbell, Memphis, Tenn., Frank R. Ober, Boston, and Fremont Chandler, Chicago, were reelected.

Dr. J. Albert Key, St. Louis, read a paper on "Common Sense in the Treatment of Acute Hematogenous Osteomyelitis." Discussed by Drs. W. D. Griesemer, Reading, Pa.; Jesse T. Nicholson, Philadelphia; John C. Wilson, Los Angeles; Earl D. McBride, Oklahoma City; Walter G. Stern, Cleveland; Charles F. Nelson, Beverly Hills, Calif., and J. Albert Key, St. Louis.

Dr. David R. Telson, Brooklyn, read a paper on "A Method of Reduction of Fractured Neck of the Femur by Transtrochanteric Skeletal Traction to Be Followed by Axial Fixation with Threaded Steel Pins, with a Report of Five Years' Follow Up on Transcervical Fixation." Discussed by Drs. Roland Hammond, Providence, R. I.; Martin B. Tinker Jr., Ithaca, N. Y., and David R. Telson, Brooklyn.

Dr. Barney J. Hein, Toledo, Ohio, read a paper on "Time Element in Fractures." Discussed by Drs. Donald C. Durman, Saginaw, Mich.; G. Masser Taylor, Los Angeles; Jesse T. Nicholson, Philadelphia; E. Payne Palmer, Phoenix, Ariz., and Barney J. Hein, Toledo, Ohio.

Dr. Walter G. Stern, Cleveland, read a paper on "Estimation of Disability After Injury." Discussed by Drs. R. W. Harbaugh, San Francisco; Earl D. McBride, Oklahoma City; Lionel D. Prince, San Francisco, and Walter G. Stern, Cleveland.

Dr. Charles S. Young, Los Angeles, read a paper on "The Operative Treatment of Pes Planus." Discussed by Drs. Maynard Harding, San Diego, Calif.; Arthur L. Fisher, San Francisco; Charles LeRoy Lowman, Los Angeles, and Charles S. Young, Los Angeles.

SECTION ON GASTRO-ENTEROLOGY AND PROCTOLOGY

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order at 9 o'clock by the chairman, Dr. Henry L. Bockus, Philadelphia.

Dr. Louis F. Bishop Jr., New York, read a paper on "Gastro-enterology in the Practice of Cardiology." Discussed by Dr. John R. Twiss, New York.

Dr. Andrew C. Ivy, Chicago, read a paper on "The Effect of Smoking on the Activities of the Alimentary Tract." Discussed by Drs. Sidney A. Portis, Chicago, and Andrew C. Ivy, Chicago.

Drs. Martin E. Rehfsuss and Guy M. Nelson, Philadelphia, presented a paper on "Gallbladder Infection, Its Experimental

Production and Attempts at Specific Therapy." Discussed by Drs. Garnett Cheney, San Francisco, and Guy M. Nelson, Philadelphia.

Dr. Paul C. Blaisdell, Pasadena, Calif., read a paper on "Operative Injury to the Anal Sphincter Mechanism." Discussed by Dr. Malcolm R. Hill, Los Angeles.

Drs. Claude C. Tucker and C. Alexander Hellwig, Wichita, Kan., presented a paper on "Proctologic Tumors: Diagnostic Difficulties and Pathologic Changes." Discussed by Drs. Curtice Rosser, Dallas, Texas; L. E. Brown, Corona, Calif.; Edward G. Martin, Detroit, and Claude C. Tucker, Wichita, Kan.

Dr. Wendell G. Scott, St. Louis, read a paper on "Recording the Movements of the Gastrointestinal Tract by Roentgen Kymography." Discussed by Drs. Charles W. Duden, St. Louis, and Wendell G. Scott, St. Louis.

Dr. Sara M. Jordan, Boston, read a paper on "Medical Aspect of Cancer of the Stomach." Discussed by Drs. Felix Cunha, San Francisco; George M. Underwood, Dallas, Texas, and Sara M. Jordan, Boston.

Dr. Harry Gauss, Denver, read a paper on "Gastrointestinal Symptoms in Disease of the Brain." Discussed by Drs. Edward G. Billings, Denver, and Theodore L. Althausen, San Francisco.

THURSDAY, JUNE 16—MORNING

Dr. Henry L. Bockus, Philadelphia, read the chairman's address, entitled "Training of the Gastroenterologic Internist."

The following papers were read as a symposium on "Ulcerative Colitis":

Dr. Thomas T. Mackie, New York: "The Medical Management of Chronic Ulcerative Colitis."

Drs. Elmer G. Wakefield and Charles W. Mayo, Rochester, Minn.: "Functional or Sociologic Disorders of the Colon: Medical and Surgical Considerations."

Dr. Thomas E. Jones, Cleveland: "The Surgical Treatment of Ulcerative Colitis."

Drs. John H. Willard, Philadelphia; J. F. Pessel, Trenton, N. J., and J. Warren Hundley, Philadelphia: "Prognosis of Ulcerative Colitis."

These four papers were discussed by Drs. William Fitch Cheney, San Francisco; John H. Fitzgibbon, Portland, Ore.; William C. Bock, Los Angeles; Arthur L. Bloomfield, San Francisco; Julian M. Ruffin, Durham, N. C.; S. L. Bernstein, Cleveland; Sidney A. Portis, Chicago; Joseph Felsen, Brooklyn; A. H. Aaron, Buffalo; Thomas T. Mackie, New York; Elmer G. Wakefield, Rochester, Minn.; Thomas E. Jones, Cleveland, and J. F. Pessel, Trenton, N. J.

Drs. Leo R. Hardt, Morris Weissman and John S. Coulter, Chicago, presented a paper on "Studies on Treatment in Intestinal Tuberculosis." Discussed by Drs. Descum C. McKenney, Buffalo; Harry Gauss, Denver; Clement L. Martin, Chicago, and Morris Weissman, Chicago.

Dr. Martin S. Kleckner, Allentown, Pa., read a paper on "A Review of a Group of Proctologic Operations Using Spinocain as an Anesthetic." Discussed by Drs. Dudley A. Smith, San Francisco; Curtice Rosser, Dallas, Texas, and Martin S. Kleckner, Allentown, Pa.

Dr. Robert Elman, St. Louis, read a paper on "Intravenous Alimentation with Special Reference to Protein (Amino Acid) Metabolism." Discussed by Drs. Theodore L. Althausen, San Francisco; Thomas T. Mackie, New York, and Robert Elman, St. Louis.

FRIDAY, JUNE 17—MORNING

The following officers were elected: chairman, Dr. Descum C. McKenney, Buffalo; vice chairman, Dr. A. H. Aaron, Buffalo; secretary, Dr. J. A. Bargen, Rochester, Minn.; executive committee: Dr. Louis A. Buie, Rochester, Minn.; Dr. Henry L. Bockus, Philadelphia, and Dr. Descum C. McKenney, Buffalo; delegate, Dr. Curtice Rosser, Dallas; alternate, Dr. Louis A. Buie, Rochester, Minn.; chairman Committee on Section Exhibit, Dr. Sara M. Jordan, Boston.

At the request of the chairman, the secretary read the following resolution:

Resolved, That the Section on Gastro-Enterology and Proctology of the American Medical Association recommend to the American Medical Association meeting here today that it records its emphatic opposition to any measure such as the proposed "State Humane Pound Law" which will

hinder or curtail animal experimentation as conducted by those fully qualified in biology and medicine. It is the belief of this society that the present level of health and humane protection of man and animals and further advance in our knowledge of the phenomena of life can be maintained only by constant vigilance and by continued study of the nature of vital processes through the experimental investigation of living animals. Every effort should be made to provide the necessary animals for scientific studies rather than to interfere by the passage of hampering legislation.

On motion made by Dr. Curtice Rosser, Dallas, Texas, seconded by Dr. Sara M. Jordan, Boston, the resolution was adopted.

Dr. J. McDonald Milligan, Elgin, Ill., read a paper on "Clinical Observations on a Group of Ulcer Cases." Discussed by Drs. Grant H. Lanphere, Los Angeles; Fred H. Kruse, San Francisco; Sara M. Jordan, Boston; John H. Fitzgibbon, Portland, Ore., and J. McDonald Milligan, Elgin, Ill.

Drs. Frederic E. Templeton and A. W. Marcovich, Chicago, presented a paper on "The Value of Roentgenologic Demonstration of the Crater in the Duodenal Ulcer." Discussed by Drs. Theodore L. Althausen, San Francisco, and Frederic E. Templeton, Chicago.

Dr. David J. Sandweiss, Detroit, read a paper on "Sex Hormones in Peptic Ulcer." Discussed by Drs. Andrew C. Ivy, Chicago, and David J. Sandweiss, Detroit.

Drs. Joseph Bank, Phoenix, Ariz., and Roby John F. Renshaw, Los Angeles, presented a paper on "Gastritis: Correlation of Gastric Analysis and Clinical Observations with Gastroscoy."

Dr. Elmer B. Freeman, Baltimore, read a paper on "Gastroscoy as Compared with Other Methods of Diagnosis in Gastric Lesions."

These two papers were discussed by Drs. Roby John F. Renshaw, Los Angeles; Milford Owen Rouse, Dallas, Texas; P. E. T. Hancock, London, England; John H. Fitzgibbon, Portland, Ore.; Frederic E. Templeton, Chicago; Joseph Bank, Phoenix, Ariz., and Elmer B. Freeman, Baltimore.

Dr. James F. Weir, Rochester, Minn., read a paper on "Some Forms of Hepatitis Not Commonly Recognized." Discussed by Drs. Dwight L. Wilbur, San Francisco; Sidney A. Portis, Chicago; Edgar Wayburn, San Francisco, and James F. Weir, Rochester, Minn.

Dr. Virgil E. Simpson, Louisville, Ky., read a paper on "Strongyloidosis: A Discussion of Strongyloid Infestation with Emphasis on Its Therapy." Discussed by Dr. Thomas T. Mackie, New York.

Dr. Harry E. Bacon, Philadelphia, read a paper on "Extra-rectal Metastatic Growths from Upper Abdominal Malignant Neoplasms." Discussed by Drs. Newton D. Smith, Rochester, Minn.; William H. Daniel, Los Angeles; Henry L. Bockus, Philadelphia; A. H. Aaron, Buffalo, and Harry E. Bacon, Philadelphia.

SECTION ON RADIOLOGY

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order by the chairman, Dr. B. R. Kirklin, Rochester, Minn.

The chairman appointed Dr. John W. Pierson, Baltimore, to serve on the executive committee in the absence of Dr. Ross Golden, New York.

Dr. Harry Shay, Philadelphia, read a paper on "The Thymus: Studies of Some Changes in the Gonads and Pituitary Following Destruction of the Thymus by Roentgen Irradiation." Discussed by Drs. Edward L. Jenkinson, Chicago; Henry J. Ullmann, Santa Barbara, Calif., and Clyde K. Hasley, Detroit.

Drs. Harry H. Bowing and Robert E. Fricke, Rochester, Minn., presented a paper on "Factors Influencing the Radio-sensitivity of Malignant Neoplasms of the Uterine Cervix." Discussed by Drs. William P. Healy, New York; Henry L. Schmitz, Chicago, and Henry J. Ullmann, Santa Barbara, Calif.

Dr. H. D. Kerr, Iowa City, read a paper on "The Irradiation of Kidney Tumors in Children." Discussed by Dr. Miley B. Wesson, San Francisco.

Dr. Justin J. Stein, Hines, Ill., read a paper on "Apical Lung Tumors." Discussed by Dr. L. H. Garland, San Francisco.

Drs. Richard Dresser and Roger C. Graves, Boston, presented a paper on "Supervoltage Roentgen Treatment of Carcinoma of the Bladder." Discussed by Drs. Robert S. Stone, Sau

San Francisco; L. H. Garland, San Francisco; Henry J. Ullmann, Santa Barbara, Calif., and John T. Murphy, Toledo, Ohio.

Drs. James F. Kelly and D. Arnold Dowell, Omaha, presented a paper on "The Roentgen Treatment of Acute Peritonitis and Other Infections with Mobile Apparatus." Discussed by Drs. Frank E. Butler, Portland, Ore.; Frederick William O'Brien, Boston; R. H. Crockett, San Antonio, Texas; Wright Clarkson, Petersburg, Va.; Howard B. Hunt, Omaha; John J. Masterson, Brooklyn, and Henry J. Ullmann, Santa Barbara, Calif.

THURSDAY, JUNE 16—MORNING

A joint meeting was held with the Section on Pediatrics. The proceedings are reported in the minutes of that section.

FRIDAY, JUNE 17—MORNING

The following officers were elected: chairman, Dr. Raymond Taylor, Los Angeles; vice chairman, Merrill Sosman, Boston; secretary, Dr. John T. Murphy, Toledo, Ohio; delegate, Dr. Edward H. Skinner, Kansas City, Mo.; alternate, Dr. Eugene P. Pendergrass, Philadelphia; representative of the Board of Radiology, John W. Pierson, Baltimore.

Dr. B. R. Kirklin, Rochester, Minn., read the chairman's address, entitled "Lipoid Pneumonitis."

Dr. William E. Howes, Brooklyn, read a paper on "Planimetry: Its Application to Thoracic Diagnosis."

Dr. Sherwood Moore, St. Louis, read a paper on "Body Section Radiography in Surgical Conditions."

These two papers were discussed by Dr. Robert R. Newell, San Francisco, and Dr. L. H. Garland, San Francisco.

Dr. Jacob Abowitz, Los Angeles, read a paper on "Hydro-nephrosis Caused by Aberrant Renal Blood Vessels Demonstrated by Intravenous Urography." Discussed by Dr. A. A. Kutzmann, Los Angeles.

Dr. J. C. Bell, Louisville, Ky., read a paper on "Further Observations of the X-Ray Manifestations of Amebic Infections of the Large Bowel." Discussed by Dr. B. R. Kirklin, Rochester, Minn.

Dr. Joseph F. Elward, Washington, D. C., read a paper on "Epiphysitis of the Capitellum of the Humerus." Discussed by Drs. Carl H. Parker, Pasadena, Calif., and John W. Pierson, Baltimore.

Drs. Wilbur P. Bailey and William V. Knoll, Los Angeles, presented a paper on "Gastrocolic Fistulas." Discussed by Dr. J. D. Coate, Oakland, Calif.

THE SCIENTIFIC EXHIBIT

The Scientific Exhibit at the San Francisco session was characterized by the high caliber of exhibits presented and the continuous and sustained interest shown by the ever present crowds in the aisles. There were 167 exhibits in all, of which 140 were presented by individual exhibitors, sixteen by government and national organizations, nine exhibits of organized medicine presented by the California Medical Association, Illinois State Medical Society, Indiana State Medical Association, and the headquarters group of the American Medical Association, and two special exhibits subsidized by the Board of Trustees.

The special exhibit on anesthesia was presented under the auspices of a committee composed of Ralph M. Waters, chairman, Madison, Wis.; P. J. Hanzlik, San Francisco; Chauncey D. Leake, San Francisco, and Philip D. Woodbridge, Boston. Demonstrations were given continuously throughout the week by a competent corps of anesthetists. A pamphlet describing the exhibit was distributed.

The special exhibit on fractures was presented under the auspices of a committee composed of Kellogg Speed, chairman, Chicago; Frank D. Dickson, Kansas City, Mo., and Walter Estell Lee, Philadelphia. More than fifty physicians from various parts of the country assisted with the demonstrations, and a pamphlet describing the exhibit was distributed. Acknowledgment is made to Major General C. R.

Reynolds, the Surgeon General, United States Army, Washington, D. C.; Colonel Roger Brooke, M. C., United States Army, Letterman General Hospital, San Francisco; Lieutenant Colonel Norman T. Kirk, M. C., United States Army, Letterman General Hospital, San Francisco; Dr. C. H. Chandler, dean, Stanford University Medical School, San Francisco, and Mrs. Mitchell and Mrs. McMurray, nurses from the Stanford University Hospital, San Francisco, for the efficient service which they rendered in connection with the fracture exhibit. Appreciation is also expressed to Dr. Carleton Mathewson Jr., local representative in San Francisco for the Fracture Exhibit, for his excellent cooperation.

Other features of the San Francisco session included a Symposium on Industrial Dermatoses by the Section on Dermatology and Syphilology presented in cooperation with the United States Public Health Service, and motion picture programs by the Section on Surgery, General and Abdominal, Section on Obstetrics and Gynecology, Section on Ophthalmology, and Section on Orthopedic Surgery, shown in spaces adjoining the exhibits of those sections.

An endeavor was made to correlate the exhibits with papers read before the various sections of the Scientific Assembly, with the result that forty-nine papers were accompanied by material in the Scientific Exhibit.

REPORT OF THE COMMITTEE ON AWARDS

The Committee on Awards made the following report:

CLASS I

(Awards in Class I are made for exhibits of individual investigation, which are judged on the basis of originality and excellence of presentation.)

The GOLD MEDAL to A. C. Ivy, R. R. Greene and M. W. Burrill of Northwestern University Medical School, Chicago, for exhibit illustrating experimentally produced intersexuality in the rat.

The SILVER MEDAL to Hermann Sommer, Hooper Foundation, University of California Medical Center, San Francisco, for exhibit illustrating plankton and paralytic shellfish poisoning.

The BRONZE MEDAL to H. J. Corper, National Jewish Hospital, Research Department, Denver, for exhibit illustrating immunity in tuberculosis; historical and experimental.

CERTIFICATES OF MERIT, Class I, are awarded to the following (alphabetically arranged):

Sherwood Moore, St. Louis, for exhibit illustrating body section radiography.

Edwin E. Osgood, University of Oregon, Portland, for exhibit illustrating culture of human marrow as an aid in the evaluation of therapeutic agents.

David J. Sandweiss, H. C. Saltzstein and A. A. Farbman, Detroit, for exhibit illustrating the relation of sex hormones to peptic ulcer.

In addition, the following exhibits are deemed worthy of honorable mention (alphabetically arranged):

That of William Osler Abbott, University of Pennsylvania, Philadelphia, and Charles G. Johnston, R. J. Noer, Grover C. Penberthy, J. C. Kenning and J. E. Lofstrom, Wayne University College of Medicine, Detroit, on acute intestinal obstruction.

That of John A. Marshall, University of California Medical Center, San Francisco, on clinical dental pathology.

CLASS II

(Awards in Class II are made for exhibits which do not exemplify purely experimental studies and which are judged on the basis of excellence of presentation.)

The GOLD MEDAL to Frank W. Konzelmann, Edward Weiss, Lawrence W. Smith, Walter I. Lillie and Edwin S. Cault,

Philadelphia, for exhibit illustrating cardiovascular-renal disease, clinical and pathologic correlation.

The SILVER MEDAL to Philip Lewin, Chicago, for exhibit illustrating newer concepts and methods of teaching orthopedic surgery.

The BRONZE MEDAL to R. J. Reitzel, S. P. Lucia, Department of Medicine, and Karl F. Meyer, Hooper Foundation for Medical Research, University of California Medical School, San Francisco, for exhibit illustrating clinical and epidemiologic demonstration of various infectious diseases.

CERTIFICATES OF MERIT, Class II, are awarded to the following (alphabetically arranged):

John O. Bower, John C. Burns and H. A. K. Mingle, Philadelphia, for exhibit illustrating comparative study of the reparative processes in the gastrointestinal mucosae following division and suture with special reference to very fine catgut sutures.

Robert A. MacArthur, Detroit, for exhibit on hematuria.

Henry W. Meyering, Mayo Clinic, Rochester, Minn., for exhibit illustrating spondylolisthesis, an etiologic factor in backache.

Gordon B. New, F. A. Figi, F. Z. Havens and J. B. Erich, Mayo Clinic, Rochester, Minn., for exhibit illustrating deformities of the face, correction by plastic surgery.

Rudolph Skarda, University of California Medical Center, San Francisco, for exhibit illustrating anatomicosurgical preparations.

In addition, the following exhibits are deemed worthy of HONORABLE MENTION (alphabetically arranged):

That of LeRoy C. Abbott, F. C. Bost and John B. Saunders, San Francisco, on leg lengthening and fractures of the hip.

That of Albert D. Davis, San Francisco, on plastic surgery.

That of L. H. Garland and A. V. Pettit, San Francisco, on prediction of certain types of difficult labor by pelviography; an obstetric and radiologic investigation.

That of A. C. Scott, Scott and White Hospital, Temple, Texas, on mammary tumors; diagnosis and treatment.

Special citation is made of the following exhibits:

That of the Indiana State Medical Association, Bureau of Publicity and the Executive Committee, Indianapolis, on an antidote for state medicine—the preventive medical health program of the Indiana State Medical Association.

That of Elliott P. Joslin, Louis I. Dublin, Howard F. Root and Herbert H. Marks, Boston and New York, on advances in the treatment of diabetes mellitus. (Dr. Joslin has previously received a medal in the Scientific Exhibit for his work on diabetes.)

That of the Symposium on Industrial Dermatoses presented under the auspices of the Section on Dermatology and Syphilology of the American Medical Association and the United States Public Health Service.

That of the United States Navy, Medical Department, on medical equipment and practice in naval training schools, hospitals, aviation, submarines and marine corps. (The United States Navy has previously received a Special Certificate of Merit in the Scientific Exhibit on this subject.)

EDUCATIONAL CLASSIFICATION

A SPECIAL CERTIFICATE OF MERIT is awarded to the Advisory Board of Medical Specialties, Pittsburgh, for its exhibit of charts, graphs and literature describing the work of the board.

SPECIAL EXHIBITS (SUBSIDIZED)

The Committee on Awards commends particularly the special exhibits on anesthesia and fractures sponsored by the American Medical Association.

RECOMMENDATIONS

The Committee on Awards believes that the method of correlating the Scientific Exhibit with the Scientific Assembly by the appointment of section exhibit representatives is of advantage and should be continued.

The Committee appreciates the difficulties encountered in securing proper accommodations for the Scientific Exhibit; it recommends, however, that special consideration be given to this problem in future years so that sufficient space may be available to accommodate the increasing number of physicians who visit the exhibit and so that a suitable environment may be secured which will be in keeping with the high standard of the exhibits.

The Committee believes that the American Medical Association owes a debt of gratitude to the Committee on Scientific Exhibit of the Board of Trustees, to the Advisory Committee, and to Dr. Thomas G. Hull, director of the Scientific Exhibit.

The Committee cannot commend too highly the arrangements, general and special, the efficient management, the instructiveness and the scientific as well as practical value of the exhibit. The exhibitors, in many cases at personal sacrifice, present exhibits prepared by modern methods and devices for the illustration of recent advances in the various fields of medicine.

EBEN J. CAREY, Chairman, Milwaukee.
H. C. BUMPUS JR., Pasadena.
DEAN LEWIS, Baltimore.
E. E. IRONS, Chicago.
W. WALTER WASSON, Denver.

EDITORIAL COMMENT ON THE ANNUAL SESSION

Each year the annual session of the American Medical Association stimulates numerous editorial comments in the newspapers. Following is a selection of a few from leading city publications:

HONEST MEN SPEAK WITH FRANKNESS AND SINCERITY

San Francisco Chronicle

The proceedings of the American Medical Association convention in San Francisco disclosed that the profession is in better health than might have been supposed from what some outside diagnosticians have said about it.

There has been and doubtless will continue to be lay criticism of some factors in the practice of medicine, extravagant claims and restrictions under extreme ethical codes. But what the lay critics have had to say upon such subjects seems almost flattering by comparison with what the medical speakers said before the convention gatherings.

These men were doctors, speaking to doctors. They lashed their fellow practitioners and themselves no less for offenses

which, reduced to essentials, mean little more than that the doctors are not superhuman.

Frankly and with admirable sincerity they discussed problems of their profession, deficiencies in the sum of medical knowledge, the pursuits of vain hopes that experience has proved to be vain. And as they spoke their fellow physicians listened with respect and attention.

It was a demonstration of honesty and high purpose that would be difficult to any except a gathering of medical men. Such self accusations from a political convention or a gathering of almost any other vocational or avocational group would be unthinkable. Yet the reporters covering these meetings heard men of high professional standing discuss openly, and without imposing any seal of confidence, subjects which would put any other group on the defensive.

When men dedicated to so lofty a duty come down off the pedestal to speak as frankly and sincerely as did the doctors at the convention, they justify the confidence that millions place in them. They disclose that their professional activity is vigorous and determined to go forward into the battle for humanity, in which they confess their present advance has been a series of skirmishes with mysterious and malignant enemies.

CONSERVATIVE MEDICINE*The Philadelphia Evening Ledger.*

It has been claimed that only the conservatism of organized medical men is opposed to national health insurance and socialized medical services. But criticism of the American Medical Association is likely to be loudest from those who, for various reasons, are not its members. Ambitious young doctors with insufficient practices may resent the caution and conservatism of their elders. Others believe, or hope, that a system of socialized medicine would give them better and more profitable opportunities than private practice.

The A. M. A. has not weakened much in its opposition to federal control of the medical care of the American people. Its house of delegates at the association's meetings in San Francisco rejected a number of resolutions which, in effect, challenged the policy of the association in respect to socialized medicine.

That policy was reaffirmed. Its essentials are that the association is opposed to governmental or lay bodies taking over the administration of medical care under any plan, and that the medical profession does not admit that the needs of the nation for low-cost or tax-paid medical services are accurately known.

It would be dangerous, without doubt, for the nation's health and medical care to be placed in political hands. Arguments for socialized medicine, for the most part, are based on an assumption that the medical profession in America is in some degree a racket, its members more concerned for their fees than for the public welfare. None of this has been proved. The A. M. A. wisely insists that until the true facts are known the medical profession deserves, at least, the benefit of the doubt, and that it would be sheer folly to embark on a program of socialized medicine without a much more thorough study of the problem than has so far been made.

"NEW DEAL" IN MEDICINE*Indianapolis Star*

The New Deal reformers apparently are insistent on undermining the work of the medical profession in their crusade to impose a mass of socialistic theories on the country. A strange note has been injected into the convention of the American Medical Association at San Francisco by those who seek to dominate the avenues through which federal paternalism can destroy the tradition of individual initiative and responsibility.

Dr. Warren F. Draper, as administration spokesman, either has been deluded by governmental propaganda or else compelled to deliver its socialistic message. He is an assistant surgeon general, representing the government's interdepartmental committee to coordinate health and welfare activities. He also is a member of the medical organization's house of delegates, the governing body of the A. M. A.

The legislative group promptly declined to accept many of Dr. Draper's statements, which obviously were either exaggerated or entirely out of order in a session concerned with medical progress rather than the New Deal's social theories.

The administration spokesman declared that the government would act if the medical profession failed to display "progressive leadership." He added that "one third of our people are not going to remain ill fed, ill housed, ill cared for in sickness." Dr. Draper might have added that most of this one third would be eliminated automatically if American business were freed of New Deal heresies and permitted to create the jobs that destroy conditions of which he complained.

The need for lower costs of medical care is urgent, yet the medical profession cannot be accused of standpatism. It has been maintaining free clinics and offering expert service in charity cases for years. The poor housing and insufficient food of which Dr. Draper lamented so tearfully are not the responsibility of the medical profession. Both would be eliminated in large part if the New Deal were scrapped and recovery permitted to function in the place of socialistic reform.

The public should not be deceived by the alluring propaganda of state medicine, which inevitably means lower professional standards and service. It is true that the nation's organized doctors bear a major responsibility in cooperating with hospitals and institutions to reduce the cost of medical care. To be effective, these reforms must be devised by practical experts and not imposed by governmental theorists.

POVERTY AND SICKNESS*New York Times*

To Miss Josephine Roche's "overwhelming central fact" that "with poverty goes not only a higher rate of sickness but a deficiency of medical care," the American Medical Association replies: "This raises the question whether the economic factor is not of greater importance than is lack of medical care in the causation of illness."

No one has ever claimed that the economic factor is not of major importance in dealing with the problem of the medically indigent. Nor has any one claimed that it was the function of organized medicine to formulate plans for better housing or improving working conditions in mines and factories and thus to raise the level of the general health. On the other hand, there is a legitimate claim on the association for plans which will bring the best medical care at the lowest possible cost, even free where necessary, to the quarter of a million women who must do without a physician's aid in childbirth, the thousands of young men and women who succumb needlessly to tuberculosis, the forty-four states that have no pneumonia control program, the infants in outlying districts who still die at a rate which is abnormally high. Thus far the association has opposed group medical service, the cooperative purchase of medical advice, health insurance of any type, some public clinics established by state health authorities, government grants to stimulate research and improve medical education; in a word, any encroachment on the traditional social and economic prerogatives of the private practitioner. It can fairly be said that in this respect it has failed to adapt itself to a changing social order—failed to realize that the problem of medical care is not the concern of physicians alone.

Some of the officers and leaders of the American Medical Association are to participate in the Interdepartmental Committee Conference which Miss Roche has arranged in Washington. What will be their attitude? Despite the adoption of an unpromising resolution which trusts that these official representatives "will be guided by the principles and opinions which have been repeatedly expressed by the House of Delegates," there is reason to hope that the association will assume an enlightened leadership in a movement new to this country. To fail to do this will be to invite the type of government control that it condemns and fears.

COMPULSORY IDEALISM*Baltimore Sun*

Miss Josephine Roche, representing the federal government, has notified the American Medical Association that "there will be concerted public action eventually for a national health program" and that "one third of our people are not going indefinitely to remain ill fed, ill housed and ill cared for in sickness." The only question remaining, she insists, "is whether highly specialized groups, experienced and trained in ways and means of meeting human needs, are going courageously and quickly to offer all they can give in constructive and progressive leadership and help in the meeting of the vast human problems of today."

But the problem to which Miss Roche refers is but a fractional part of a larger issue. What the public as a whole and each citizen as an individual must decide is whether or not idealism can be compelled. In theory, it can. Yet it is the verdict of history that the human race never has been coerced successfully very long. Even the authority of democracy proves futile when it attempts too much. The greatest power the world ever has seen—namely, that of organized religion—was defeated when, logically enough, it endeavored to dictate to conscience.

Specifically, the medical profession is the present object of attack by those who believe that altruism can be forced. Tomorrow the lawyers or the teachers, perchance, may be commanded to socialize themselves. Sooner or later the humblest corner grocer might be driven into line. If it be fair to expropriate the physician, it certainly would be just to enslave to the state all of his contemporaries who may be possessed of "ways and means of meeting human needs." Where would the policy of subjection stop? The answer of the Communist is: Nowhere!

But does dragging down the so-called "upper" two thirds really benefit the "suppressed" and "underprivileged" one third of the population? Radicals confidently reply in the affirmative. Their more conservative neighbors are not so sure. Poverty, they argue, is not eliminated by being shared. It also might be contended that generosity ceases to be a virtue when it is prevented from being voluntary.

Only the blindest of optimists can persuade himself that "a national health program" or any authentic merit could be put into effect without the willing assistance of medical practitioners as a class. The current campaign to conscript their assistance appears to be unwise in both motivation and result. Perhaps some of its sponsors might care to remember that the average doctor already is giving his services to patients unable to pay. Under the most benign group health plan ever formulated there still would be people who could not afford expensive medical attention. The same might be said for many other luxuries, not excluding that of rest and recreation conducive to physical and mental well-being.

WHERE THE DOCTORS DO STAND

The Milwaukee Journal.

The American Medical Association is being hammered over the head editorially in some newspapers because it did not go pell-mell for state or socialized medicine in its San Francisco convention. The inference is that of a standpat organization made up of members insensible to the public need, and intent only on fee collecting.

This kind of comment makes it all the more necessary to understand where the association drew its lines, what it did and what it refused to do.

The association did not oppose a wider use of medical care. It recognized the need for a wider use and urged its realization.

The association did not dodge the problem of caring for the indigent and the borderline cases. It urged on state and county medical societies that they develop "the most accurate and complete information that will enable them . . . to maintain continuously medical care that is sufficient in amount and satisfactory in quality."

The association did not oppose group hospital insurance. It backs group hospital insurance, with proper safeguards to patient and doctor.

The association did refuse to throw the doors wide open to state medicine by indorsing some vague plan that would make the care of indigent and borderline cases, and the whole development of medicine, a burden on public treasuries, to be met by the dictatorship of bureaucracy over medical practice. If that be reaction, this country ought to be thankful for it.

What would happen if the medical men went the whole way with those advocates of state medicine who go out from Washington to make speeches at every medical convention, those doctors who are in revolt because the association will not accept European models, and those foundations with money to spend that are trying their best to fasten socialized practice on this country?

Exactly the same incompetency in regard to medical care that Harry Hopkins seems to have fastened on this country in regard to food, clothing and work—a permanent class, ever growing larger, to be provided for by the government. Do we want that? Do we want another such mistake in methods?

The association wants to keep the job within the medical profession and it thinks the state and local societies are the ones to do it. And it can be done that way. It is being done in Milwaukee County. Free care under medical decision for the truly indigent and budgeting for the borderline cases—that is, borderline cases pay what they are able to pay and no more—this plan is working out in our own area. Recent surveys have not disclosed one case of need that was not met.

Isn't that the better way? We let the doctor say whether a man is ill and needs help. The other plan would let a layman bureaucrat make the decision. Then you would have incompetency and politics mixed in, and outright graft, as they have in every European system.

This, it would seem, is the dividing line between the medical organizations and the advocates of socialized medicine.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Dr. Kress Honored.—Dr. George H. Kress, Los Angeles, newly elected secretary of the California Medical Association, was honored May 23 at a dinner of the Research Study Club and the Los Angeles Academy of Ophthalmology and Otolaryngology. The speakers included Drs. Alexander Ray Irvine, toastmaster; Harlan Shoemaker, William D. Donohue, John Mackenzie Brown, George Dock and Isaac H. Jones. Dr. Kress was presented with a traveling bag. The new activities of Dr. Kress with the state association necessitated his retirement from active practice, the state board of health, the deanship of the Los Angeles Medical Department of the University of California and the presidency of the Los Angeles County Medical Association.

Death from Rabies.—*California and Western Medicine* reports the death from rabies April 3 of a dairyman of Kings County. In March, this man noticed that one of his cows was having difficulty in swallowing. To aid the cow he placed his hand in the animal's mouth, receiving abrasions on his knuckles. The cow died that night and the laboratory gave a positive diagnosis of rabies the following day. In the afternoon treatment for rabies was instituted for the dairyman. At least twelve doses of vaccine were administered. On April 1 he had diminished reflexes, slightly stiff neck, a high temperature and was lethargic. He died April 3. At no time did he have convulsions and there was no difficulty in swallowing. Examination of the brain at Stanford University School of Medicine, San Francisco, disclosed the presence of Negri bodies, confirming the diagnosis of rabies.

FLORIDA

Society News.—The Dade County Medical Society was addressed June 7 by Drs. James L. Anderson and Ralph W. Jack, both of Miami, on "Hypoglycemic Shock Therapy" and "Diagnosis of Pregnancy" respectively. A symposium on peptic ulcer was presented before the Duval County Medical Society June 4 by Drs. Frederick K. Herpel, West Palm Beach; Herbert L. Bryans, Pensacola, and John S. Turberville, Century. The Pinellas County Medical Society devoted its meeting June 3 to a symposium on tuberculosis; the speakers were Drs. Arthur J. Logie, Jacksonville; Rollin D. Thompson, Orlando; Arnold S. Anderson, St. Petersburg, and William H. Pickett, Clearwater.

GEORGIA

New Cancer Clinic.—A new cancer treatment center has been organized at the new City-County Hospital, La Grange, completed last September, according to *Georgia's Health*. Dr. Enoch Callaway is the director of the clinic and Dr. Emory R. Park, associate director. Clinics will be held each Wednesday. With the opening of this clinic there are now eight regularly organized cancer treatment centers available in the state.

IDAHO

Plague Infection.—According to *Public Health Reports*, plague infection has been proved in tissue from one ground squirrel shot May 25, sixteen miles north of Lava Hot Springs, Bannock County.

Society News.—At a recent meeting of the Southwest Idaho Medical Society in Boise the speakers were Drs. Clifford D. Sweet, Oakland, on the child as a patient; Frederick Bost, San Francisco, spinal disorders, and Norman N. Epstein, San Francisco, diagnosis and treatment of syphilis. Dr. George W. Pierce, San Francisco, held two clinics on reconstructive surgery.

ILLINOIS

Society News.—Dr. Frederick R. Schmidt, Chicago, discussed common diseases of the skin before the Madison County Medical Society in Alton June 3. The Macoupin County Medical Society was addressed in Carlinville May 24 by Drs. Robert J. Crossen and Franz J. Arzt, St. Louis, on gynecology and newer management of threatened abortion, respectively.

Chicago

Course in Electrocardiography.—A graduate course in electrocardiography will be presented at Michael Reese Hospital by Dr. Louis N. Katz, director of cardiovascular research, August 22-September 3. It is planned to individualize the course so that at the end of the period each student will be capable of taking and properly interpreting routine electrocardiograms. Additional information may be obtained from the medical librarian at the hospital, Twenty-Ninth Street and Ellis Avenue.

Endowment for Biologic Research.—The University of Chicago will receive \$1,500,000 from the Rockefeller Foundation for research in the biologic sciences, provided an additional sum of \$500,000 can be obtained from outside sources before June 30, 1941. During the next three years the foundation will provide \$180,000 at the rate of not more than \$60,000 a year for biologic research. This grant has been made so that the equivalent of the income of the capital sum of \$1,500,000 will be available to the university during the period allowed for raising the sum of \$500,000. Should the university secure the funds in a shorter period, the temporary annual grants will be canceled. The foundation has provided grants for the support of basic laboratory research in fundamental biologic problems since 1929 and the new endowment will support this work permanently on a larger scale.

INDIANA

University News.—Miss Ruth J. McNutt, former secretary to William Lowe Bryan, LL.D., president, Indiana University, succeeded Allan Hendricks July 1 as librarian at the Indiana University School of Medicine, Indianapolis. She will serve also as library coordinator for the four libraries at the medical and dental schools, for the social service department and at the extension center.

Society News.—Dr. William M. Doughty, Cincinnati, discussed "Cancer of Oral Tissues" before the Dearborn-Ohio County Medical Society in Lawrenceburg recently. At a meeting of the Jasper-Newton County Medical Society in Morocco recently Dr. James H. Hawk, Indianapolis, spoke on puerperal infection. The Monroe County Medical Society was addressed in Bloomington May 9 by Dr. William C. MacCarty, Rochester, Minn., on "Cancer and Cancer Control."

Typhoid Outbreak in Bus Passengers.—Contaminated drinking water from a well near Angola, used by passengers of a bus line, has been found to be responsible for at least fifty-two cases of typhoid with six deaths in Indiana and several other states, according to *Public Health Reports* June 17. Cases in persons giving a history of having stopped off at Angola for meals when traveling by bus during the early part of April have been reported from Ohio, New York and Illinois, and two cases in California have been traced to this source. *Public Health Reports* suggests that other states have probably had recent isolated cases of typhoid of undetermined origin which are also attributable to this source. The onset of the majority of cases was in April; use of the water was stopped by the health officer the latter part of April.

KANSAS

Society News.—The Wyandotte County Medical Society was addressed in Kansas City May 3 by Drs. Eldon S. Miller on "Relation of Coronary Heart Disease and Diabetes Mellitus" and Don C. Peete, "Post Influenza Myocarditis." Dr. Carl O. Rice, Minneapolis, discussed "Injection Treatment of Hernia" before the society recently. Dr. Elmer L. Sevringhaus, Madison, Wis., addressed the Shawnee County Medical Society in Topeka June 6 on "Endocrine Therapy in General Practice."

KENTUCKY

Personal.—Dr. Clarence E. Bird has resigned as professor and head of the department of surgery at the University of Louisville School of Medicine, effective August 1. He plans to practice in Providence, R. I., according to the *Harvard Medical Alumni Bulletin*.

Regional Meeting.—The sixty-ninth annual meeting of the Southwestern Kentucky Medical Association was held recently in Paducah with the following speakers: Drs. Daniel L. Sexton, St. Louis, on "Endocrinology in General Practice"; Ralph L. Cook, St. Louis, "Upper Respiratory Infections in Children"; Euclid M. Smith, Hot Springs National Park, Ark., "Management of the More Common Arthritic Disorders"; William G. Johnson, Louisville, "Endocrine Glands and

Organotherapy," and Silas H. Starr, Louisville, "Postpartum Hemorrhage." Dr. Morton W. Haws, Fulton, was elected president.

LOUISIANA

Society News.—At the third annual meeting of the Louisiana-Mississippi Ophthalmological and Otolaryngological Society in New Orleans recently the guest speakers were Drs. Albert L. Brown, Cincinnati, on "Affections of the Paranasal Sinuses Involving the Optic Nerve" and Arthur M. Alden, St. Louis, "Deep Neck Infections." Officers are Drs. Francis E. Le Jeune, New Orleans, president; Daniel C. Montgomery, Greenville, vice president, and Edley H. Jones, Vicksburg, secretary. The next annual session of the society will be held in Gulfport.

MICHIGAN

The Henry Russel Award.—Dr. Franklin D. Johnston, assistant professor of internal medicine, University of Michigan Medical School, Ann Arbor, was presented May 3 with the Henry Russel award for 1938 by the university for his accomplishments and promise in medical research and teaching. Dr. Johnston graduated from the University of Michigan as an electrical engineer in 1922 but became interested in medicine when he became the first patient in diabetic coma to be treated with insulin at the University Hospital, it was reported. He graduated at the medical school in 1929.

MINNESOTA

Personal.—Dr. Demeter Kalinoff, for thirty-six years a practicing physician in Stillwater, was named to the Stillwater Hall of Fame at the annual Hall of Fame banquet recently, in recognition of "his charity, generosity and kindness in his practice among the people of Stillwater."

Society News.—Dr. Owen H. Wangenstein, Minneapolis, delivered the presidential address before the Minnesota Pathological Society May 17 on "Physiologic and Pathologic Aspects of Therapeutic Problems in Obstruction of the Bowel." Mr. A. G. Stasel, Minneapolis, was chosen president-elect of the Minnesota Hospital Association at its annual convention in Minneapolis May 21 and Dr. Peter D. Ward, superintendent of the Miller Hospital, St. Paul, was installed as president.

MISSOURI

Symposium on Cancer.—The St. Louis Medical Society was addressed recently by Drs. Frederick J. Taussig on "Present Possibilities and Future Expectations in Cancer Therapy"; Leo Loeb, "The Causes of Cancer," and Axel N. Arneson, "Fundamental Principles Underlying Radiation Therapy." Dr. Frederick W. Broderick, Bournemouth, England, discussed "The Fundamental Factor in Etiology" before a recent joint meeting of the St. Louis medical and dental societies.

New Health Districts.—The following have been placed in charge of the recently formed district health units:

Dr. Theodore L. Waddle, Dexter, district 2, consisting of Stoddard, Scott, New Madrid and Mississippi counties.

Dr. Will H. Aufranc, Kennett, district 3, consisting of Pemiscot and Dunklin counties.

Dr. Enoch M. Bryan, Fredericktown, district 4, consisting of Butler, Wayne, Bollinger, Cape Girardeau, Perry, St. Genevieve, Madison, Iron and Washington counties.

Dr. Charles W. Meinershagen, Salem, district 5, consisting of Howell, Oregon, Ripley, Carter, Reynolds, Shannon, Texas, Dent, Pulaski, Phelps and Crawford counties.

Dr. Henry H. Asher, Ozark, district unit 6, consisting of Barton, Jasper, Newton, McDonald, Dade, Lawrence, Barry, Stone, Christian, Taney, Ozark, Douglas, Webster and Wright counties.

Dr. Robert D. Wright, Osceola, district 7, consisting of Bates, Vernon, Henry, St. Clair, Cedar, Benton, Hickory, Polk, Morgan, Camden, Dallas and Laclede counties.

Some counties are continuing as independent units; that is, financed by the local authorities, and other district units have been formed but are not yet in operation.

NEW YORK

Society News.—Dr. Ward H. Cook, bureau of laboratories, department of public health, Yonkers, was chosen president of the New York State Association of Public Health Laboratories at its annual meeting in Cooperstown May 23. Dr. Gilbert J. Dalldorf, Grasslands Hospital Laboratory, Valhalla, and Mary B. Kirkbride, Sc.D., state laboratory, Albany, were elected vice president and secretary, respectively. Dr. Louis A. Siegel, Buffalo, addressed the Medical Society of the County of Niagara June 14 on endocrine therapy.

Faculty Promotions at Syracuse.—The board of trustees of Syracuse University recently approved the following promotions in the school of medicine:

Dr. John G. Fred Hiss to be professor of clinical medicine.
Dr. Maynard E. Holmes, professor of clinical medicine.
Dr. Eugene N. Boudreau, professor of clinical medicine (neurology).
Dr. Jacob J. Levy, associate professor of medicine in physical therapy.
Neal E. Artz, Ph.D., associate professor of physiologic chemistry.
Dr. Lee A. Hadley, assistant professor of medicine in physical therapy.
Dr. Noble R. Chambers, assistant professor of medicine (neurology).
Dr. Bertram S. Levinson, assistant professor of clinical medicine.
Dr. Charles George Murdock Jr., assistant professor of clinical pediatrics.
Dr. Mary F. Brew, associate professor of psychiatry.
Dr. Eugene Davidoff, assistant professor of psychiatry.

New York City

Display of Medical Military Memorabilia.—St. Luke's Hospital presented an exhibit in June of medical materials and other relics associated with the war services of members of its board of managers, medical officers and nursing staff. The display included original pictures, portraits, documents, photographs and war relics illustrating military surgery at the front, at base hospitals, ambulance and Red Cross work and in the navy on sea and shore. The hospital was represented in active World War service by more than 70 per cent of its medical staff.

Dr. Carrel Announces Retirement.—Dr. Alexis Carrel, member of the Rockefeller Institute for Medical Research, having reached the retirement age of 65, has announced that his work at the institute will be halted, his division closed and his staff disbanded July 1, 1939, according to the *New York Times*. Dr. Carrel was born in Sainte Foy les Lyon, France, June 28, 1873. He received his degree in medicine at the University of Lyon in 1900; he served as professor at his alma mater until 1902, came to the United States in 1905, and joined the staff of the Rockefeller Institute for Medical Research in 1906. In 1912 he was awarded the Nobel Prize in Medicine for success in suturing blood vessels and transplantation of organs. This was the first time the prize in medicine had been awarded in the United States. Dr. Carrel won the Dr. Sofie Nordhoff-Jung Cancer Prize in 1931 and received the eighth Cardinal Newman Award of the Newman Foundation in 1937. He is an Associate Fellow of the American Medical Association.

NORTH CAROLINA

Officers of the State Medical Board.—Dr. Lewis W. Elias, Asheville, was elected president of the state board of medical examiners at a meeting June 13 in Raleigh, and Dr. William D. James, Hamlet, was elected secretary. An entire new board was elected at the meeting of the Medical Society of the State of North Carolina in May, to serve for six years.

Society News.—At a meeting of the medical societies of Rutherford, Polk, McDowell and Cleveland counties in Rutherfordton recently, the name Thermal Belt Medical Society was adopted.—Dr. Arthur L. Daughtridge, Rocky Mount, was elected president of the North Carolina Radiological Society at its recent meeting in Pinehurst and Dr. Major I. Fleming, Rocky Mount, was reelected secretary.

Personal.—Dr. James R. Rogers, Raleigh, was honored at a meeting of the Raleigh Academy of Medicine June 10 as its oldest member. Dr. Rogers has been in active practice more than fifty years.—Dr. J. Roy Norton, assistant director of county health work on the staff of the state health department, Raleigh, has been made assistant director of the division of preventive medicine.—Dr. John S. Anderson, New Bern, health officer of Craven County, has resigned to become health officer of Cabarrus County. He succeeds Dr. Daniel G. Caldwell, Concord, who resigned because of ill health.—Dr. Wingate M. Johnson, Winston-Salem, has been elected president of the board of trustees of Wake Forest College.

OHIO

Health Survey in Toledo.—Carl E. Buck, Dr.P.H., field director, American Public Health Association, is conducting a public health survey of Toledo at the request of the Toledo Academy of Medicine. The purpose of the study is to determine the extent to which Toledo agencies are providing adequate health protection service and to recommend means by which various activities may be coordinated and the program improved.

Fifty Years of Practice.—The Mahoning County Medical Society held a testimonial dinner in honor of Dr. Harmon E. Blott, Youngstown, May 17, in recognition of his completion of fifty years in the practice of medicine and made him an

honorary member of the society. Dr. Blott graduated at Western Reserve University School of Medicine, Cleveland, in 1888. Dr. Paul D. White, Boston, was the speaker at the scientific meeting of the society.

OKLAHOMA

Changes in the Faculty at Oklahoma.—The title of emeritus professor was conferred by the University of Oklahoma School of Medicine, Oklahoma City, on Drs. Edmund S. Ferguson, professor of ophthalmology; William M. Taylor, professor of pediatrics, and John F. Kuhn, professor of gynecology, it has been announced. Dr. Leslie M. Westfall, professor of clinical ophthalmology, has been appointed to succeed Dr. Ferguson as professor and head of the department of ophthalmology; Dr. Clark H. Hall, associate professor of pediatrics, will succeed Dr. Taylor as professor and head of the department of pediatrics, and Dr. Grider Penick, associate professor of gynecology, will become professor and head of the department of gynecology, succeeding Dr. Kuhn. The appointments are effective September 1.

OREGON

Society News.—The Lincoln County Medical Society was recently organized with Drs. Wilfred S. Thurtell, Newport, as president and Orley N. Callender, Toledo, as secretary.—Dr. Ralph A. Fenton, Portland, addressed the Central Willamette Medical Society, Corvallis, in May on "Hoarseness from the Standpoint of the General Practitioner."—The annual meeting of the Southern Oregon Medical Society was held at Oregon Caves in May with Grants Pass physicians as hosts. The guest speakers were the following Portland physicians: Drs. Otis F. Akin, on "Fractures and Dislocations of the Cervical Vertebrae"; Laurence Selling, "Herniation of the Intervertebral Disks," and Homer P. Rusli, "Sex Hormones." Dr. Charles T. Sweeney, Medford, president of the Oregon State Medical Society, and Mr. Clyde Foley, executive secretary of the state society, discussed organization activities. Dr. Albert F. Walter Kresse, Medford, was elected president.

PENNSYLVANIA

Society News.—Drs. Walter F. Donaldson, Pittsburgh, and James H. Corwin, Washington, addressed the Westmoreland County Medical Society at the Mountain View Hotel near Greensburg June 21 on "Medical Service—Today and Tomorrow" and "Medical Service Survey" respectively.

Personal.—Dr. Richard Weissenberg, formerly professor extraordinarius of anatomy, University of Berlin, has been appointed a fellow at the Wistar Institute of Anatomy and Biology and will undertake research at the Effingham B. Morris Biological Farm, Bristol, according to *Science*. Dr. Weissenberg served as visiting professor of cytology at Washington University School of Medicine, St. Louis, last year.

Philadelphia

New Medical Director at Jefferson Hospital.—Dr. Robert Bruce Nye, director of the Curtis Clinic at Jefferson Medical College Hospital, has been appointed medical director of the hospital. He succeeds Dr. Henry K. Mohler, who was recently appointed dean of the medical college. Dr. Nye graduated from Jefferson in 1927 and has been director of the Curtis Clinic since it was opened in 1931.

Portrait of Dr. Anspach.—The graduating class of 1938 at Jefferson Medical College presented to the college April 21 a portrait of Dr. Brooke M. Anspach, professor of gynecology. A native of Reading, Pa., Dr. Anspach graduated at the University of Pennsylvania School of Medicine in 1897. He served at his alma mater as associate in gynecology until 1921, when he became professor at Jefferson. He is a former president of the American Gynecological Society. The senior class also presented a plaque to the college April 27 commemorating the services of the late Dr. Michael A. Burns, professor of neurology.

Pittsburgh

Society News.—The Allegheny County Medical Society was addressed June 21 by Drs. Joseph W. Hampsey on "Allergic Rhinitis: Use of Nasal Smears as an Aid in Diagnosis"; Simon H. Ratner, "Tuberculosis of the Larynx"; John P. Henry, "Treatment of Varicose Veins and Leg Ulcers," and Cleophas E. Poellot, Woodville, Pa., "Lest We Forget—The Intellect."—The Pittsburgh Surgical Society was addressed June 17 by Drs. John Shelton Horsley, Richmond, Va., on "Appendicitis—Recent Improvements in Treatment" and Donald W. G. Murray, Toronto, Canada, "Heparin in the Treatment

of Postoperative Thrombosis."—Dr. Walter T. Dannreuther, New York, discussed "Supravaginal Hysterectomy—A Review of 535 Personal Cases" before the Pittsburgh Obstetrical and Gynecological Society May 14.—At a meeting of the Pittsburgh Ophthalmological Society, May 23, Dr. Stuart N. Rowe spoke on "Changes in the Eyes Resulting from Intracranial Mass Lesions."

RHODE ISLAND

Society News.—Dr. Walter C. Rocheleau, Woonsocket, president, state medical society, addressed a recent meeting of the Pawtucket Medical Association in Pawtucket on health insurance.—A symposium on hypertension and albuminuria in pregnancy was presented before the Providence Medical Association in Providence May 2; the speakers were Drs. Foster S. Kellogg, Duncan E. Reid and Harold M. Teel.

Executive Secretary Appointed.—Mr. John E. Farrell, graduate manager of athletics at Providence College for the past twelve years, has been appointed full time executive secretary of the Providence Medical Association. Mr. Farrell was graduated from Providence College and has taken graduate courses at Harvard and Boston universities. He has been engaged in newspaper and publicity work and recently initiated a course in journalism at Providence College.

TENNESSEE

Promotions at Vanderbilt.—The board of trustees of Vanderbilt University, Nashville, recently approved the following promotions in the school of medicine:

Dr. Samuel M. Bloomstein to be professor of clinical pediatrics.
Dr. Leonard W. Edwards, associate professor of clinical surgery.
Dr. Rudolph H. Kampmeier, associate professor of medicine.
Dr. Ralph M. Larsen, assistant professor of surgery and anatomy.
Dr. Guy Sydney McClellan, assistant professor of obstetrics and gynecology.

Annual Regional Meeting.—Dr. John Jackson, Dyer, was elected president of the West Tennessee Medical and Surgical Association at its forty-seventh annual session in Jackson May 26. Among the speakers were Drs. Milton S. Lewis, Nashville, on "Factors That Influence Neonatal Mortality"; Edwin J. Lipscomb, Memphis, "Fractures of the Humerus Involving the Shoulder Joint," and Arthur F. Cooper, Memphis, "Some Phases of State Medicine."

TEXAS

Society News.—Dr. Bernard H. Bayer addressed the Harris County Medical Society, Houston, recently on "Fractures of the Skull—A Study of 200 Cases."—Drs. Harry R. Levy and James H. Herndon addressed the Dallas County Medical Society May 26 on "Appendicitis, Differential Diagnosis and Treatment" and "Diagnosis in Therapy of Brucellosis" respectively.—The annual premedical banquet sponsored by the University of Texas chapter of Alpha Epsilon Delta, honorary premedical fraternity, was recently held in Austin, with Dr. Edward H. Cary, Dallas, as toastmaster. Students and faculty members from forty colleges and universities in Texas were invited. Among the speakers were Drs. Ernst W. Bernier, Houston, president-elect of the Texas State Medical Association; William S. Carter, Galveston, dean, University of Texas School of Medicine; Walter H. Moursund, Dallas, dean of Baylor University Medical School, and Kenneth H. Aynesworth, Waco, a regent of the university.—At a meeting of the Denton County Medical Society recently in Denton, the speakers were Drs. John M. Pace, Dallas, on "Transurethral Prostatic Resection" and Frank A. Selecman, Dallas, "Peritonitis."—The Hardin-Tyler Counties Medical Society was addressed in Kountze recently by Drs. Harold L. D. Kirkham and Joseph R. Theriot Jr., both of Houston, on skin grafting and emergencies in abdominal surgery, respectively.—Among others, Dr. William S. Webb, Fort Worth, discussed "Cataract Surgery" before the Tarrant County Medical Society recently.

VIRGINIA

New Rural Health Director.—Dr. Lonsdale J. Roper, recently associate director of the venereal disease program of the state health department, Richmond, has been made director of rural health for the department, succeeding Dr. Charles Howe Eller. Dr. Roper was for several years director of the department of public welfare in Portsmouth.

Mental Hygiene Advisory Board.—The following appointments to the state advisory board on mental hygiene have been announced: Drs. Joseph S. DeJarnette, superintendent of the Western State Hospital, Staunton; Joseph Blalock, superintendent of the Southwestern State Hospital, Marion; Oscar B. Darden, Westbrook Sanatorium, Richmond. Reappointed

members are Drs. Hugh C. Henry, Petersburg; George W. Brown, Williamsburg; Harvie DeJ. Coghill, Robert Finley Gayle Jr., Howard R. Masters and James Asa Shield, all from Richmond.

Joint Psychiatric Meeting.—The North Carolina Neuropsychiatric Association met with the Virginia Neuropsychiatric Society recently at the Westbrook Sanatorium, Richmond. The speakers were Drs. Bronson Crothers, Boston, on "A Pediatrician in Search of Mental Hygiene"; Maurice Barnes Woodhall, Durham, N. C., "Encephalography in the Diagnosis of Posttraumatic Psychosis and Other Sequelae of Acute Head Injuries"; Elbert A. MacMillan, Winston-Salem, "Hystero-Epilepsy" and Roy H. Long, Morganton, "A Preliminary Report on the Use of Metrazol in the Treatment of the Psychotic."

WASHINGTON

Health Institute.—Medical and civic authorities cooperated in holding a health institute in Spokane recently to acquaint the public with developments in medicine and to present a brief study of some important diseases.

Society News.—Dr. Ross E. McPhail, Lakeview, addressed the Grays Harbor County Medical Society, Elma, May 18, on "Indications and Contraindications for Thoracotomy."—Drs. Hale A. Haven and Louis H. Edmunds, Seattle, addressed the Yakima Valley Medical Society in Yakima recently on brain tumors and injuries to the knee, respectively.—Dr. Charles P. Wilson, Portland, addressed the Walla Walla Valley Medical Society at its final meeting of the season in Walla Walla May 12 on rheumatic diseases. Dr. Carl J. Johannesson was elected president.

Graduate Course at State University.—The twenty-second annual graduate medical course will be presented at the University of Washington, Seattle, July 18-22. The lecturers will be Drs. Dean Lewis, professor of surgery, Johns Hopkins University School of Medicine, Baltimore; Myrnie G. Peterman, professor of pediatrics, Marquette University School of Medicine, Milwaukee; Frederick H. Falls, professor of obstetrics and gynecology, University of Illinois College of Medicine, Chicago, and Leo G. Rigler, professor of radiology, University of Minnesota Medical School, Minneapolis.

WEST VIRGINIA

Society News.—Dr. Russell B. Bailey, Wheeling, discussed "Lobectomy for Lung Abscess" before the Logan County Medical Society recently.—At a meeting of the Monongalia County Medical Society in Morgantown recently Dr. William B. Morrison, Columbus, spoke on "Recognition of Protein Efficiency in the Treatment of Carcinoma of the Stomach."—Dr. Frank N. Wilson, Ann Arbor, Mich., addressed the Ohio County Medical Society recently on cardiac pain. Dr. William James Gardner, Cleveland, addressed the society May 6 on "Surgical Lesions of the Cranial Nerves."

GENERAL

Special Society Election.—Dr. Melver Woody, New York, was chosen president-elect of the American Association of Industrial Physicians and Surgeons at its annual meeting in Chicago June 10 and Dr. Clarence D. Selby, Detroit, was installed as president. Other officers are Drs. Daniel L. Lynch, Boston; Lloyd Noland, Birmingham, Ala., vice presidents, and Volney S. Cheney, Chicago, secretary.

Examination by Board of Dermatology.—If the number of candidates warrants it, the American Board of Dermatology and Syphilology will hold an examination Friday and Saturday, November 11-12, before the meeting of the American Academy of Dermatology and Syphilology in St. Louis. Should an examination be held, the latest date for receipt of applications of class B would be September 1 and of class A October 1. Further information may be obtained from the secretary, Dr. Clarence Guy Lane, 416 Marlboro Street, Boston.

Fraudulent Salesman.—Wisconsin physicians have recently reported the activities of one John Bowles, who claimed to represent the Professional Circulation Company of New York and took orders for magazines and books which the physicians never received. It is reported that Bowles was discharged by the National Medical Book Company several months ago and that firm is trying to locate him for fraudulent actions. Bowles is 5 feet 10 inches tall, wears a mustache and has dark wavy hair, blue eyes and deep lines in his face. He speaks with a slight Southern accent and was at one time a practicing dentist.

Bibliography of Medical Aeronautics.—A bibliography of aeronautical medicine, which lists book and pamphlets dealing with the medical aspects of flying, has been compiled as a part

of a Works Progress Administration project. It includes treatises by English, French, German, Italian and other foreign authors. The effects of flying on the cardiovascular system, the eye, ear, nose and throat, and the effects of altitude, parachute jumping, wind, cold and speed on the various organs and the entire system are covered in the compilation, as are fatigue and staleness, hygiene, nervous system, pathology, physical qualification, psychologic aspects, psychophysiologic aspects, sanitary aviation, accidents, air sickness, airplane ambulances and carbon monoxide poisoning. John R. Palmer, managing project supervisor, U. S. Works Progress Administration, 5111 R. C. A. Building, New York, is handling correspondence relating to the bibliography. The Institute of Aeronautical Sciences announces it will appreciate receiving additional references, corrections and criticism.

Payment of Blood Donor.—The United States Code provides that when there is filed in the General Accounting Office a claim against the United States that may not lawfully be adjusted by the use of an appropriation theretofore made, but which claim, in the judgment of the Comptroller General of the United States, contains such elements of legal liability or equity as to be deserving of the consideration of the Congress, the Comptroller General shall submit the claim to the Congress by a special report containing the facts and his recommendation thereon. The furnishing of blood for transfusion to a patient in a Veterans' Administration Facility by a salaried civilian employee of the federal government, with full knowledge that under the law and regulations of the Veterans' Administration he was not entitled to payment therefor, does not involve, in the judgment of the General Accounting Office, such elements of legal liability or equity as would justify that office in reporting it to the Congress with a recommendation that compensation be paid for the service rendered.

One Million to Infantile Paralysis Foundation.—Mr. Basil O'Connor, New York, president of the National Foundation for Infantile Paralysis, in a letter addressed to President Roosevelt June 21 announced the appointment of a general advisory committee and four subcommittees to advise the foundation on the allotment of its funds. At that time Mr. Keith Morgan, New York, chairman of the Committee for Celebration of the President's Birthday, presented to the President a check for \$1,010,000 as the principal instalment of the funds raised in the 1938 celebrations. It is expected that about \$50,000 more will be added when the auditor's report is completed. The general committee has the following members:

Dr. Irvin Abell, Louisville, Ky., President of the American Medical Association.

Dr. Philip Lewin, associate professor of orthopedic surgery, Northwestern University Medical School, Chicago.

Dr. Thomas Parran, surgeon general, U. S. Public Health Service, Washington, D. C.

Dr. Max Minor Peet, professor of surgery, University of Michigan Medical School, Ann Arbor.

Dr. Thomas M. Rivers, director, Hospital of the Rockefeller Institute for Medical Research, New York.

Dr. Rivers is chairman of the subcommittee on scientific research, of which the members are Dr. Donald B. Armstrong, Metropolitan Life Insurance Company, New York; Dr. George W. McCoy, U. S. Public Health Service, Washington, D. C., and Karl F. Meyer, Ph.D., Hooper Foundation, University of California, San Francisco. Dr. Parran heads a committee on public health which will give aid in time of epidemics; members are Drs. Don W. Gudakunst, state health officer of Michigan, Lansing, and George H. Ramsey, health commissioner of Westchester County, White Plains, N. Y. Dr. Peet is chairman of a committee on education with Dr. Abell and Dr. Morris Fishbein, Editor of THE JOURNAL, Chicago, as the other members. Dr. Lewin is chairman of a committee on treatment of after-effects; other members are Drs. George E. Bennett, associate professor of orthopedic surgery; Johns Hopkins University School of Medicine, Baltimore; Charles Leroy Lowman, Los Angeles Orthopedic Hospital, Los Angeles; Leo Mayer, associate professor of clinical orthopedic surgery, Columbia University New York Post-Graduate Medical School, New York, and Frank R. Ober, assistant dean and clinical professor of orthopedic surgery, Harvard University Medical School, Boston. The foundation has adopted the policy of assisting in study and research on the medical problem as a whole and not of giving individual care for those afflicted. It is felt that the problem of locating crippled children and providing medical, surgical, corrective and other services and care and facilities for diagnosis, hospitalization and after-care of the individual case is essentially a local problem and that the foundation must confine itself to aiding institutions and centers in which methods or procedures may be developed which will be of benefit to all the afflicted.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 11, 1938.

A Criticism of Tonsillectomy

At the Royal Society of Medicine Dr. J. Alison Glover, medical officer of the ministry of health, read a paper on the incidence of tonsillectomy in school children, in which he said that the rise in the incidence of tonsillectomy was one of the major phenomena of modern medicine. It had been estimated that 200,000 tonsillectomies were performed annually in this country and that the operation accounted for a third of all the operations with general anesthesia performed in the United States. About 1902 a rapid rise took place in the number of tonsillectomies performed in England. The period of highest incidence was at the ages of from 5 to 7 years, a time of great change in the oral cavity and in the general development of the child. Was it not possible that many of the operations performed at this period removed tonsils which were enlarged physiologically or in immunologic response to the unaccustomed herd infections of school life or to the sepsis from decay of the primary dentition? Might not some of the improvement attributed to the operation be due to physiologic changes which normally took place at this period? A study of the operation rates in different localities of this country showed wide variations but no correlation with such factors as overcrowding, poverty, bad housing or climate. The distribution defied any explanation save that of medical opinion on the indications for operation. Large and in some cases drastic reductions in the number of operations performed on elementary school children in certain areas had no unsatisfactory results. The social distribution was yet more of an enigma; tonsillectomy was at least three times as common in the well-to-do classes. The better the opportunity for careful nurture, the more the child was liable to tonsillectomy. In the public schools picked athletes had been tonsillectomized in the same proportion as other boys.

Though tonsillectomy was always something of a gamble, in certain cases it gave brilliant results. Unfortunately the recollection of these often led to operation without adequate cause or sufficient regard to the possibility of the enlargement being temporary, physiologic or immunologic. Mr. T. B. Layton, surgeon to the throat department, Guy's Hospital, had pointed out that the mortality of the operation was higher than was generally appreciated. Dr. Glover concluded by quoting from the recent report of the schools epidemic committee of the Medical Research Council: "It is a little difficult to believe that among the mass of tonsillectomies performed today all subjects for operation are selected with true discrimination, and one cannot avoid the conclusion that there is a tendency for the operation to be performed as a routine prophylactic ritual for no particular reason and with no particular result."

In the discussion there was general agreement with Dr. Glover's views. Mr. T. B. Layton said that he first adopted a conservative attitude in 1911, which further experience had strengthened. He refused to admit that the function of the tonsil was unknown; it was the largest and most important of the protective subepithelial lymphatic glands. If a person had three attacks of tonsillitis which seemed to be due to organisms residing in the tonsils he would not admit that tonsillectomy was a gamble, but otherwise he did not think that one could ever be certain that it was productive of good results. Irreparable harm could be done by removing the lymphoid tissue of children living under bad hygienic conditions.

Preventable Foot Trouble

A resolution was passed by the West Sussex Division of the British Medical Association asking that the attention of the minister of health be drawn to the large amount of preventable

foot trouble caused by the wearing of ill shaped shoes. This in turn came before the public health committee of the association and led to some discussion. It was agreed that there was good ground for some action, and one or two members urged, especially in view of the national campaign for physical fitness, that a considered and authoritative report be drawn up pointing out the damage done to the feet from the cause indicated, and that such a report should have all the publicity possible. But some cynics on the committee expressed doubt as to whether women in particular could ever be persuaded to wear proper and hygienic shoes. They did not want them, one member declared, and preferred high heels and the pattern generally worn as being really more comfortable. The opinion had been expressed in the *British Medical Journal* that it was erroneous to suppose that the shoe with the high heel had any pernicious effect and that it was rather an advantage. But the general feeling of the committee was that something ought to be done in the way of compiling a considered report. It was mentioned that through the action of the medical profession in years gone by tight lacing had disappeared. In some districts already, where there were special foot clinics, action had been taken to deal with the problem of proper footwear. Ultimately it was decided to refer the subject to the science committee of the British Medical Association.

The Use of Radium

In the eighth annual report of the National Radium Trust and Radium Commission for 1936-1937 it is stated that the outlook of surgery is rapidly altering with regard to those sites in which radiotherapy has a field of application. The previous practice of routine operation with radiotherapy as a reserve for recurrences has been virtually abandoned in the best centers. Schemes of treatment are evolved after consultation between the surgeon or laryngologist and the roentgen ray or radium therapist before anything is done. In this treatment each member of the team works on a settled plan with great advantage. The commission holds that to secure a reasonable standard of service for the treatment of cancer throughout the country the whole problem should be attacked by the government along national lines, for in only a proportion of cases suitable for radiotherapy is it being received. Every step should be taken to encourage persons suffering from or suspected to be suffering from cancer to resort to treatment at the earliest possible moment. The work done at the national centers is good but does not cover the whole country; new centers and the expansion of the existing ones are necessary.

THE DANGER OF IRRADIATING PRECANCEROUS GROWTHS

It is apt to be forgotten that radiation may produce as well as cure cancer. In the report of the pathologic research department of the Radium Institute further investigations into the treatment of precancerous lesions are reported. It had already been demonstrated that when from 4,000 to 8,000 roentgens is applied to a precancerous lesion of the skin in mice, produced by painting with tar, the onset of malignancy is delayed or even inhibited. Investigations have now shown that smaller doses, from 160 to 1,440 roentgens, increase instead of inhibiting malignancy. This indicates a serious danger in treating precancerous lesions by radiation. No doubt good results would follow if the whole lesion was given a dose of about 6,000 roentgens, but if the lesion was given a smaller dose or if any part of it received a smaller dose there would be a danger of producing cancer. During the summer it was observed that mice painted with carcinogenic agents, such as tar, shale oil or benzpyrene, when placed in the sun showed signs within a few minutes of being burned by it. Further investigation showed that these agents had sensitized the skin to light and that this action was a common property of carcinogenic agents.

Air Raid Precautions in Factories

All possible precautions are being taken in this country against the horrors of the latest development of "civilized warfare." At a meeting of the Association of Industrial Medical Officers Dr. N. W. Hammer, medical officer to the air raids precaution department of the government, said that factories should prepare plans to deal with their own special conditions, within the scheme of the local authorities for dealing with air raids. First aid parties in a factory should consist of three men, and the proportion should be two parties for 250 men, with an additional party for each additional 250 men or part thereof. The first aid parties should work with rescue parties ready to give aid before sending the victim to the first aid post or hospital. The members should be trained to relieve suffering and to save life, if the need arises, by arresting urgent hemorrhage or treating asphyxia from electrocution. A factory of any size should make provision for the reception and treatment of those injured in an air raid as a preliminary to their being sent home or to a hospital. The factory should also provide for the cleansing of the uninjured and contaminated. It might be well to have a medical officer at the first aid post to give interim treatment, including transfusions.

The Supply of Synthetic Drugs in Wartime

In the House of Commons a member asked the government whether their attention had been drawn to the fact that in war the British Empire would be without important chemical compounds of which Germany had a practical monopoly. The minister concerned replied that they were well aware that the discovery of new chemical compounds of certain kinds, particularly those used in the treatment of tropical and some other diseases, at present depends largely on research work undertaken by German industrial concerns. For this reason the government approved the proposal of the Medical Research Council for expenditure of \$150,000 per annum on research in chemotherapy, to enable this country to play a greater part in future in making new discoveries in this field.

PARIS

(From Our Regular Correspondent)

June 11, 1938.

Culture of Virus of Measles

At the May 24 meeting of the Académie de médecine of Paris a paper was read by Dr. Harry Plotz of the Pasteur Institute on the results of his study of the virus of measles. He stated that the only animal which has thus far been found susceptible to contracting measles is the monkey (*Macacus rhesus*). There is a lack of uniformity in the symptoms following inoculation of defibrinated blood taken from a given human being with measles. In a series of inoculated monkeys the Koplik sign, mucosal and cutaneous eruptions, fever, leukopenia and lymphocytosis can all be found, but rarely all of them in a single animal. The most constant are acute leukopenia and a cutaneous eruption. In a former communication Dr. Plotz called attention to a form of measles (*rougeole inapparente*) in monkeys without apparent signs. The acute leukopenia appears, as do all the aforementioned clinical evidences of the infection, after a period of incubation varying from twelve to fifteen days. If a second monkey is inoculated with the blood of one who has shown only acute leukopenia, a typical eruption is to be observed. The blood used in all the experiments was taken from a patient with measles in the service of Prof. André Lemierre at the onset of the eruption. The blood was defibrinated and 5 cc. injected subcutaneously into a monkey. The remainder of the blood was employed for cultures. Thirteen days after inoculation of the monkey, a few maculopapular areas appeared on the face and trunk. The eruption became more diffuse on the fourteenth and fifteenth

days after inoculation and disappeared completely on the sixteenth day. There was a drop from 15,500 to 5,500 in the number of leukocytes on the fourteenth and fifteenth days, the number rising gradually to normal during the next few days. The leukopenia was accompanied by lymphocytosis. There was a marked rise in temperature between the ninth and the sixteenth day. Blood taken from this monkey on the fifteenth day was inoculated into a second monkey, and a typical eruption and leukopenia followed.

The cultures of the virus are made in the presence of living cells, the technic followed being the same as that used for the culture of other viruses. Five cc. of Tyrode's solution and several drops of a suspension of chick embryo cells are placed in a 50 cc. Erlenmeyer flask for ten days. Then 1 cc. of the serum of a noninoculated monkey and 1 cc. of defibrinated blood from a patient with measles are added. After a few drops of chicken plasma are added, the flasks are closed with rubber corks. Under these conditions a culture is obtained in the presence of proliferating cells. The rubber corks are employed to prevent liberation of carbon dioxide and maintain a more uniform pH concentration. The cultures are placed in an incubator at 37 C. for three days and then flasks containing the freshly prepared medium inoculated with 1 cc. of the preceding culture, previously ground in a mortar. A temperature chart was shown of a monkey inoculated with 5 cc. of a culture which had been reinoculated ten successive times on the medium cited. A typical eruption appeared on the monkey's face and trunk; it became quite diffuse as early as the first day and paler on the second day and then disappeared completely. There was a sudden drop of the leukocyte count from 22,500 to 7,500 in twenty-four hours on the eighth day. Marked lymphocytosis was noted during the period in which the eruption was most diffuse.

Treatment of Cerebral Abscess

The neurologic surgeon Dr. Clovis Vincent, in a paper at the May 4 meeting of the Académie de chirurgie of Paris, stated that poor results in a certain proportion of cases are due to the fact that one is apt to employ a more or less routine method independent of the cause of the abscess. A sharp distinction should be made between abscesses which are secondary to nasal or aural foci and the type of abscess seen by the neurosurgeon. The former as a rule are in close proximity to the primary focus, are superficial and relatively small and are not accompanied by diffuse edema of a lobe of the cerebrum. Such postnasal or postaural abscesses usually can be successfully treated by simple drainage, provided the arachnoid space is excluded, as suggested by Lemaître. The abscesses which the neurosurgeon encounters are large, usually multilocular and multiple. They are also relatively deeply located beneath the convexity of the cerebral hemisphere. The infection reaches the brain by way of the blood stream, and the lesion is accompanied by considerable edema. Clinically, a cerebral abscess of nonotitic or nasal origin may fail to cause any symptoms, or either the picture is that of acute encephalitis or there is a history of such a syndrome. Dr. Vincent has been successful in some cases in following the method proposed by Dandy; viz., adequate exposure without opening the dura mater and simple puncture. In the majority of Dr. Vincent's cases, however, this method had been unsuccessful. The technic now employed by him consists in removal of a large portion of the wall of the abscess cavity, a procedure analogous to that used in the treatment of a cerebral neoplasm, followed by closure without drainage. If too short an interval has elapsed since recession of the symptoms referable to the primary focus, one should be content to limit the operative intervention to the construction of an osteoplastic flap over the abscess area, without opening the dura, and should carry out the complete removal of the wall and contents of the abscess

as a second step. Dr. Vincent warned against waiting too long to perform the second operation, because the wall of the abscess cavity increases rapidly in thickness, rendering its removal very difficult.

Vaccination Against Diphtheria Made Obligatory

Reference has been made to obligatory vaccination of all French soldiers against diphtheria with the aid of the Ramon toxoid, termed anatoxin here. Some time ago the lower house of the national legislature passed a bill extending such compulsory vaccination to all children during the second or third year. At its June 2 session the French senate passed a similar bill, so that such vaccination is now obligatory. Parents or guardians are made responsible for having all children vaccinated against diphtheria. No child can be admitted to any school without presenting a certificate showing that this law has been complied with. All school children up to the age of 14 years who have not previously been vaccinated must submit to vaccination as soon as possible after publication of the law in the *Journal officiel*. Publication took place June 3. The vaccinations with the aid of the Ramon toxoid will be carried out without expense to the parents. The outlay will be amply compensated by a marked reduction in the present mortality rate from diphtheria of 2,000 deaths and in the morbidity rate of over 20,000 cases annually.

Celebration in Honor of Professor d'Arsonval

The leading medical society of France, the Académie de médecine of Paris, devoted its June 7 meeting to the celebration of the fiftieth anniversary of the election to its membership of Professor d'Arsonval. Before bestowing a medal, Prof. Fernand Bezançon, president of the Académie de médecine, eulogized the many important contributions to science by Professor d'Arsonval. During a demonstration given by the physiologist Claude Bernard in 1873, d'Arsonval as a young medical student volunteered to repair a galvanometer which had failed to function during the experiment. This attracted the attention of Bernard, who asked d'Arsonval to become an assistant in his laboratory. He continued in this capacity until the death of Bernard. At this period biology and physics were considered to bear little relation to each other, and d'Arsonval devoted all his energies to demonstrating that this was not true. After Bernard's death in 1878 the young assistant d'Arsonval continued to work with Brown-Séquard until 1887, when the title of professor was bestowed on him. This period was the most fertile in the field of biophysics for d'Arsonval. His research studies on animal heat, electrophysiology, calorimetry and respiration were all published during this period.

D'Arsonval became the successor of Brown-Séquard on the latter's death in 1897 and continued to add to his already important contributions. Among these may be mentioned the perfection of many types of apparatus, such as galvanometers, calorimeters, galvanoscopes, chronometers and photometers; the description of the mechanism of contraction of muscles; the production of electricity in certain species of fishes; the discovery of the effect of electric currents on animals, and, above all, the discovery that high frequency currents can traverse the human body without damage to the tissues. The last-named contribution has been of the greatest importance in the development of modern therapeutic methods. One of the first applications of a discovery of d'Arsonval in medicine was the use of electrocoagulation in the treatment of bladder tumors. Since then the use of diathermy in the treatment of various diseases and more recently of the radio knife in surgical procedures and of transurethral resection of the prostate have greatly extended the field of application of d'Arsonval's discoveries.

At the close of the address by Professor Bezançon, d'Arsonval, who is still active at the age of 87, spoke for half an hour.

BERLIN

(From Our Regular Correspondent)

May 17, 1938.

News of the Universities

While news of the universities was reported in *THE JOURNAL* April 11 several important new developments have occurred since then. Dr. Scheel, national fuhrer of students, recently addressed the professors and docents of Hamburg University. He said that the university must become better integrated in the Nazi state; if this long overdue adjustment is not soon made, the university itself, despite its great tradition, will face a critical situation. Today some 20 per cent of the student population belong to Nazi party formations; this proportion is far too small. Even more necessary than the "orientation," as he called it, of the students toward the new principles is a similar adjustment on the part of the faculty members. Learning is not yet sufficiently Nazi, but it must become so if the university wishes to survive. Dr. Scheel also referred to the problem of the shortage of younger men trained in the professions. For example, each year for one man graduated by a school of engineering three engineers die. If the university cannot meet the demand for trained men, industry and government will have to undertake the training of the younger generation. Such an eventuality would mean, however, the extinction of the university.

Scheel's utterances serve to illuminate many aspects of the situation. On the other hand, it is interesting to note that the national minister of education is striving to aid those smaller universities which, because of the general decline in academic matriculation, had almost been forced to close. The ministry has repeatedly stated that the maintenance of the small university is of vital importance to the state. Official efforts are being made to persuade the student to enter the smaller institutions; the principal advantages alleged are the cheaper cost of living in the smaller community as contrasted with the big city and the greater opportunity for contact between pupil and teacher. It is pointed out that the ratio of docents to students at Berlin is 1:9.3 and at Munich 1:12.5, whereas at Marburg it is 1:6.3 and at Giessen 1:3.3. The ministry refutes the objection that the academic standards and scientific equipment of the smaller universities are inferior. It is denied that the most distinguished professors are to be found only in the big cities. Material inducements too, in the form of special offers of part time employment for undergraduates, are calculated to make the small university more attractive to prospective matriculants. It is too early to determine with what measure of success, if any, these efforts have been rewarded.

Of further interest are several new regulations. The legal status of the university professor has been regulated anew. Full professors are no longer retired but are "released" (namely, released from official duties); they continue to receive their salaries but are ineligible for any further increases. The so-called lecture-guaranty, namely, assurance of a specified minimum income from lecturing, is abolished by the new plan. In a general decree the national minister of education has defined the extent of academic activity of the "released" professor. The latter retains his erstwhile official title with the added designation "emeritus." Even after being "released" a professor may be retired on account of political or racial reasons or for professional incapacity; this would entail a reduction of his salary. Furthermore, it is now stipulated that a professor can no longer be transferred by order of the ministry. Previously the new régime had decreed that professors might be transferred and retransferred even against their will; this usually signified relegation to a smaller university. This is now changed. The age limit remains, as for all other government employees, at 65. Previously the compulsory retirement

age of professors was not uniform throughout the reich; in many German states it was fixed at 68, in many others at 70, and so on. Another order, issued by the national minister of education, deals with the award of honorary academic degrees. The new law supersedes all former regulation of this custom. Henceforward the candidate for an honorary degree must measure up to strict professional and personal qualifications. The minister reserves to himself the right to examine any candidate. This greater discrimination can only be most welcome. During the postwar period the conferring of honorary degrees became common, and often purely financial considerations were involved. One might say that at certain institutions the doctor's degree *honoris causa* could be purchased for a price. In the future, distinguished personal contributions to knowledge will be the only recognized qualification for the honorary doctorate. No longer will degrees be conferred for indirect services, such as the establishment of foundations and other gifts by industrial magnates. Nor will noteworthy and nonscientific contributions to the state by men in public life any longer be rewarded by the honorary doctor's degree. Members of the Nazi party may now receive the honorary doctorate, but they must offer the same scholarly qualifications as other citizens. University professors on active service cannot receive the honorary doctorate. German citizens who are candidates for honorary degrees must qualify under the usual racial and political tests. A special authorization from the minister will be required for the conferring of the degree on a foreigner. Bestowal of the honorary title of senator, citizen or president by a university is regulated in general by the mentioned provisions, except that these titles may be conferred in recognition of indirect service to learning, such as the establishment of a foundation.

Measures have been taken to integrate Austrian universities into the Nazi system. These schools are now to form "the living bridge to the peoples and provinces of the southeast." The matriculation of Jewish students has been further restricted; the quota of Austrian Jews permitted to study at the university at any one time is fixed at 2 per cent in each special field. This percentage is somewhat smaller than the proportion of the Jewish to the total population of Austria, for, as stated in the ministerial decree, this establishment of a *numerus clausus* is calculated to offset a development that has been going on for decades. In the winter semester of 1936, 11 per cent of the student population of Austrian universities were Jews, namely, members of the Jewish religious group. At Vienna University alone the percentage of Jewish students was 19.42, and in the medical school about one third of all matriculants were of Jewish extraction. The following data on enrolment in the Austrian universities attest the importance of these institutions in the academic world: The number of students of all Austrian schools of university rank, including the veterinary and business institutes, is more than 15,000, whereas in the older German reich, with ten times as great a population, the number of university students is around 75,000, only five times the number of Austrian students. Of the 15,000 students in Austria a good 25 per cent are women. The enrolments at the various universities are 9,900 students at Vienna, barely 2,000 at Graz and 1,500 at Innsbruck. About 4,500 students are matriculated in the medical schools; this is the largest number in training for any one profession.

Group Examinations for Cancer

The professor of gynecology at Königsberg recently reported examinations at his clinic for cancer. Women of 30 and over are subjected to gynecologic examinations at definite intervals. These examinations are made to determine whether pathologic conditions exist. The women receive further consultation where the treatment is actually given. The group examinations are made only to promote the early diagnosis of cancer. Difficulties which were encountered at first in inducing the women to sub-

mit to this examination have now been overcome. In the course of 2,587 examinations of this type, eighty-one erosions suggestive of carcinoma were detected, that is, in 3.1 per cent of the examined women. In 25 per cent of these eighty-one cases of suspected erosion, the exploratory excision disclosed a carcinoma. Moreover, three carcinomas of the uterine cervix and one carcinoma of the rectum were detected among the 2,587 women. At the same time, these group examinations revealed that myoma is to be found at the most in 2 per cent of women who have passed the age of 30. In general it may be said that group examinations provide possibilities for the early diagnosis of carcinoma which are not available otherwise.

AUSTRALIA

(From Our Regular Correspondent)

May 24, 1938.

National Health Insurance Scheme

A bill for national health and pensions insurance, now being debated in the commonwealth parliament, will if it becomes law materially affect medical practice in Australia. Although the great advances made in prevention and treatment of disease in the last fifty years have increased the cost of satisfactory medical service, many are of the opinion that a plan involving impersonal payment will interfere with the personal relationship which must exist between patient and doctor. Inadequate payment will destroy this relationship, and if a practitioner must take too many patients in order to make a reasonable living he cannot cultivate that personal contact or spend the necessary time to do the good work. The federal council of the British Medical Association in Australia has agreed on a remuneration of 11 shillings per unit yearly. Whether this will prove adequate cannot be determined until the scheme has been in operation for a time. The government's present proposals for health insurance were described as incomplete and inadequate in an official statement issued by the federal council of the British Medical Association. The association considers that the essential principles which should form the basis of any national health service are that the service should offer full scope and opportunity for the prevention and cure of disease and the promotion of full mental and physical activity; that the service should offer opportunities for research, without which there can be no advance in medical or public health; that the service should be based on the provision of a general practitioner of his own choice for every individual, in accordance with the present system of private practice; that the service should be complete—not only must it provide to every one the services of a general practitioner, but it must make available consultant and specialist services and such auxiliary services as pathologic and x-ray examinations, nursing and massage services. There must also be accommodation and treatment in hospitals, sanatoriums and convalescent homes.

The present proposal embraces only a section of the community, about 1,850,000 of the workers, and does not include their dependents, and it makes no provision for the unemployed or the unemployable, many of whom are in the greatest need of medical attention. It does not supply a specialist or an institutional service. It ignores preventive measures and takes no account of the greatest medical need of the day, a vastly increased provision for early diagnosis of disease. The government's scheme is, in effect, an extension of the system of contract practice by which members of friendly societies receive medical benefits. The friendly societies are vitally interested in the scheme. They at present cater to 600,000 members and their dependents in Australia, and of these it is estimated that 400,000 will come under the new scheme. Their organizations could be of great assistance to the authorities in the administration of the scheme, because of their long experience with sickness benefit. However, friendly societies as such will receive no par-

ticular recognition from the scheme. They may form approved societies for administration of a section of medical benefits, but this advantage is offered to any organization with a membership of 2,000 or more. The loss in the friendly societies' voluntary membership will probably be considerable. As the national scheme makes no provision for dependents, it is expected that the friendly societies will come to some agreement with the medical profession for voluntary insurance against contingencies affecting dependents.

There are still many important details of the bill to be discussed, among them being the form of administration, the problem of the sparsely populated areas, the question of mileage and the definition of the scope of a general practitioner service. In all these matters, representatives of the profession are to be consulted. Other matters of great importance are cooperation between the national health insurance service and the hospital service in each state, the organization of a medical service for dependents, the organization of a medical service for the unemployed and cooperation with the dental profession.

Australian Consumption of Sugar

In spite of continuous efforts of members of the medical profession and others interested in the nutrition of the community to reduce the consumption of cane sugar and other highly refined carbohydrates in Australia, the figures of the sugar board for the 1937 season show a further increase in home consumption. The season showed a record output of 810,000 tons, compared with 782,000 in 1936 and 647,000 in 1935. Of the total purchased, 365,000 tons, or 45 per cent, was used by Australia, representing an average per capita consumption of 121 pounds (55 Kg.) per annum, or 0.33 pound (151 Gm.) daily. The position in Queensland is interesting. The Queensland Nutrition Council energetically condemns large amounts of sugar or sweet foods in a diet which attempts at balance, contending that, although sugar in itself is not harmful, it destroys appetite for the more wholesome foods. On the other hand, this state produces over 95 per cent of Australian sugar, and the industry has played an important part in the development of tropical areas.

The White Australia policy forbids the use of colored labor on the canefields, with the result that there is a large white population working under humid, tropical conditions and presenting nutrition problems of its own. The Queensland Nutrition Council is anxious to assist in the solution of these problems and has received promise of financial support from the Australian Sugar Producers' Association. It should be interesting, therefore, to watch the consumption of sugar in Queensland for the next several years.

Marriages

THEODORE C. ERICKSON, Montréal, Que., Canada, to Miss Mary Rachel Harrover of Cheam, Surrey, England, May 24.

GENEVA M. DYE, Washington, D. C., to Mr. Joseph Turner of Lurgan, North Ireland, in Hong Kong, China, in April.

FRANCIS JAMES BRACELAND to Miss Hope Van Gelder Jenkins, both of Philadelphia, June 1.

DOROTHY LOONIS FRAME, New York, to Mr. Charles Billings England of Passaic, N. J., May 28.

PAUL E. McMASTER to Miss Anna E. La Chapelle, both of Los Angeles, May 28.

MILTON L. MILLER, Chicago, to Miss Bernice Saul of New York, May 6.

MAURICE GERSHMAN to Miss Belle Kalikow, both of Brooklyn, April 3.

JAMES THOMAS KING to Miss Martha Foster, both of Atlanta, Ga., June 7.

Deaths

Frank Alexander Delabarre, Boston; University of Pennsylvania Department of Medicine, Philadelphia, 1895; also a dentist; assistant professor of orthodontia, 1907-1910, professor, 1910-1918, Tufts College Dental School; chief of staff orthodontia department and dean, Postgraduate School of Orthodontia, Forsyth Dental Infirmary for Children, 1914-1919; consultant, Massachusetts Department of Health; lecturer, Tufts College Dental School, and Harvard University Dental School; past president of the Massachusetts Dental Society, American Academy of Dental Science and the New York Society of Orthodontists; president-elect of the American Association of Orthodontists; aged 70; died, April 16, in the Faulkner Hospital.

Sandford Halsey Kinne, Binghamton, N. Y.; Syracuse University College of Medicine, 1909; member of the Medical Society of the State of New York and the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; otolaryngologist to the Binghamton City and Lourdes hospitals and Charles S. Wilson Memorial Hospital, Johnson City; consulting otolaryngologist to the Binghamton State Hospital, Ideal Hospital, Endicott, and the Tioga County General Hospital, Waverly; aged 53; died, April 13, of nephritis, hypertension and cerebral thrombosis.

William Frederic Moore * Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1905; assistant professor of bronchoscopy and esophagoscopy at the Graduate School of Medicine of the University of Pennsylvania; member of the American Academy of Ophthalmology and Oto-Laryngology and the American Bronchoscopic Society; on the staffs of the Philadelphia General, Episcopal and Children's hospitals; served during the World War; aged 56; died, April 25, of heart disease.

William John Steele, Baldwin, N. Y.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; member of the Medical Society of the State of New York; on the staffs of the Nassau Hospital, Mineola, and the Mercy Hospital, Hempstead; formerly member and president of the board of education; bank president; for many years postmaster; aged 70; died, April 21, of diabetes mellitus, pyelonephritis, coronary sclerosis and lobar pneumonia.

R. Decatur Smith, Greenville, S. C.; University of the South Medical Department, Sevanee, Tenn., 1897; Medical College of the State of South Carolina, Charleston, 1902; member of the South Carolina Medical Association; past president of the Greenville County Medical Society; aged 67; died, April 19, in the General Hospital of toxemia due to burns received from a gas heater.

William Orlin Colburn * Lincoln, Neb.; Northwestern University Medical School, Chicago, 1904; member of the American Academy of Pediatrics; past president of the Lancaster County Medical Society; chairman of the department of pediatrics, Bryan Memorial Hospital; aged 57; died, April 10, of coronary occlusion, nephrolithiasis and pyonephrosis.

Eugene Gates, Two Rivers, Wis.; Rush Medical College, Chicago, 1902; member of the State Medical Society of Wisconsin; aged 67; past president and secretary of the Manitowoc County Medical Society; served during the World War; aged 68; on the staff of the Municipal Hospital, where he died, April 28, of cerebral hemorrhage and arteriosclerosis.

Alfred Lubbert Van Dellen * Chicago; Northwestern University Medical School, Chicago, 1910; member of the American Academy of Ophthalmology and Oto-Laryngology; on the staffs of the Illinois Eye, Ear, Nose and Throat Infirmary and the Englewood Hospital; aged 50; died, April 1, at Rochester, Minn., of ureterolithiasis.

Norman L. Howison, Menomonie, Wis.; State University of Iowa College of Medicine, Iowa City, 1882; for many years county physician and health officer of Menomonie; for thirty years attending physician to the Dunn County Asylum and County Home; aged 88; died, April 1, of a fracture of the hip received in a fall.

Paul Carroll Lybyer, Ogdensburg, N. Y.; Rush Medical College, Chicago, 1914; member of the Medical Society of the State of New York and the American Psychiatric Association; served during the World War; aged 52; on the staff of the St. Lawrence State Hospital, where he died, April 23, of chronic myocarditis.

Walter Spencer Fleming * Mount Vernon, N. Y.; University of the City of New York Medical Department, 1884; an Affiliate Fellow of the American Medical Association; aged 74;

on the staff of the Mount Vernon Hospital, where he died, April 5, of hypertensive heart disease and cerebral hemorrhage.

Ernest Robert Middleton, Abilene, Texas; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1909; aged 52; fellow of the American College of Surgeons; on the staff of the West Texas Baptist Sanitarium; aged 53; died, April 15, of coronary occlusion.

Robert Francis Morton, Staten Island, N. Y.; New York Medical College and Flower Hospital, New York, 1937; aged 30; intern at St. Vincent's Hospital, West New Brighton, where he died, April 11, of injuries received when thrown from an ambulance while speeding to a sick call.

Robert F. Gates, Brownville, N. Y.; Homeopathic Hospital College, Cleveland, 1885; for many years member of the board of education; at one time county coroner; health officer of the villages of Pamela, Brownville and Glen Park; aged 77; died, April 3, of myocarditis.

Frederick Morton Harris, Green Bay, Wis.; Rush Medical College, Chicago, 1914; formerly secretary of the Brown-Kewance-Door County Medical Society; served during the World War; aged 49; died, April 7, in the Veterans Administration Facility, Hines, Ill.

Warren Brown Keator, Findlay, Ohio; Barnes Medical College, St. Louis, 1895; member of the Ohio State Medical Association; served during the World War; formerly on the staff of the Home and Hospital; aged 72; died, April 20, of cerebral hemorrhage.

Frank Anson Smith, Lebanon, N. H.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1884; member of the New Hampshire Medical Society; aged 82; died, April 25, in St. Petersburg, Fla., of coronary occlusion.

James Harris Hicks, Denton, Texas; Barnes Medical College, St. Louis, 1899; member of the State Medical Association of Texas; formerly on the staff of the Denton Hospital and Clinic; at one time county health officer; aged 62; died, April 6, of heart disease.

John Calvin Keller * Windgap, Pa.; Columbus Medical College, 1886; past president of the Northampton County Medical Society; for many years secretary of the board of health of Windgap; on the staff of the Eastern (Pa.) Hospital; aged 73; died, April 26.

Floyd Grant Patterson * Du Bois, Pa.; University of Pittsburgh School of Medicine, 1909; served during the World War; on the staff of the Du Bois Hospital; formerly on the staff of the Maple Avenue Hospital; aged 50; died, March 25, in Bradford.

Francis Aubrey Howard, Slater, Mo.; St. Louis Medical College, 1877; member of the Missouri State Medical Association; aged 84; died, April 22, in the John Fitzgibbon Memorial Hospital, Marshall, of chronic nephritis, uremia and arteriosclerosis.

Garabed Arshag Zacar Garabedian * Tulsa, Okla.; Rush Medical College, Chicago, 1913; assistant in medicine (pediatrics) at his alma mater; aged 49; died, April 26, of coronary thrombosis secondary to streptococcal infection of the throat.

Frank J. Hitchcock, Binghamton, N. Y.; University of Vermont College of Medicine, Burlington, 1890; member of the Medical Society of the State of New York; coroner; aged 77; died, April 25, in the City Hospital of coronary thrombosis.

Edgar Alexander Fisher * Worcester, Mass.; Boston University School of Medicine, 1887; fellow of the American College of Surgeons; on the staff of the Worcester Hahnemann Hospital; aged 72; died, April 18, of lobar pneumonia.

Winfield Scott Gehrett, Deshler, Ohio; Western Reserve University School of Medicine, Cleveland, 1919; member of the county board of health; aged 44; died, April 5, in the Woman's and Children's Hospital, Toledo, of coronary thrombosis.

Ellen Emma Bartholomew Scudder, New York; Cornell University Medical College, New York, 1899; formerly a medical missionary; aged 64; died, April 10, of arteriosclerotic nephrosclerosis, cardiac hypertrophy and hypertension.

Ross Edward Anderson, Memphis, Tenn.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1931; member of the Tennessee State Medical Association; aged 39; was found dead, May 3, of a self-inflicted bullet wound.

John A. Stapleton, Rochester, N. Y.; University of Buffalo School of Medicine, 1891; member of the Medical Society of the State of New York; for many years police and fire surgeon; aged 78; died, April 13, of myocarditis and nephritis.

Harold Virgil Johnson, Fort Worth, Texas; Jefferson Medical College of Philadelphia, 1909; member of the State

Medical Association of Texas; on the staff of the Baptist Hospital; aged 50; died, April 22, of coronary heart disease.

Nicasio Gregorio Gonzalez, Kansas City, Mo.; University of Kansas School of Medicine, Kansas City, 1930; aged 34; on the staff of the University of Kansas Hospital, Kansas City, Kan., where he died, April 30, of myelogenous leukemia.

William Henry Coe @ Auburn, N. Y.; Bellevue Hospital Medical College, New York, 1896; aged 66; on the staffs of the Mercy Hospital and the Auburn City Hospital, where he died, April 6, of duodenal perforation and cholecystitis.

Donald Clare Hoffman, New York; Harvard University Medical School, Boston, 1926; an associate medical director of the Metropolitan Life Insurance Company; aged 39; died, April 21, in Rye, N. Y., of essential hypertension.

William Garfield Henderson, Cuba, Mo.; University of Louisville Medical Department, 1912; member of the Missouri State Medical Association; formerly county coroner; aged 56; died suddenly, April 19, of coronary thrombosis.

Oscar Highland Ternstrom @ Minneapolis; University of Minnesota Medical School, Minneapolis, 1920; on the staff of the Lutheran Deaconess Hospital; aged 46; died April 20, in St. Barnabas Hospital, of coronary thrombosis.

Whitfield Harral, Dallas, Texas; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895; formerly medical director of the Southwestern Life Insurance Company; aged 67; died, April 12.

Robert William Bobe, Monro City, Ind.; Washington University School of Medicine, St. Louis, 1934; member of the Kansas Medical Society; aged 28; died, April 13, in the Deaconess Hospital, St. Louis, of heart disease.

William Ira Fulton, Mount Vernon, Mo.; Missouri Medical College, St. Louis, 1897; member of the Missouri State Medical Association; served during the World War; aged 65; died, April 17, in Springfield of angina pectoris.

Walter P. McGrath, Menasha, Wis.; Milwaukee Medical College, 1903; was president of the health council, and city physician; aged 59; died, April 14, in St. Elizabeth's Hospital, Appleton, of uremia and chronic nephritis.

Russell Newton Davis, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; on the staff of the South Shore Hospital; aged 54; died, April 30, of coronary thrombosis.

Isaac N. Mayfield, Giddings, Texas; Louisville (Ky.) Medical College, 1880; member of the State Medical Association of Texas; for many years county health officer; aged 81; died, April 12, of diabetes mellitus.

Edward Philip Laskey @ Haverhill, Mass.; Harvard University Medical School, Boston, 1909; on the staff of the Haverhill Municipal Hospital; aged 55; died, April 23, of aortic stenosis and aortic regurgitation.

Haim Guelman @ New York; University and Bellevue Hospital Medical College, New York, 1910; on the staff of the Fordham Hospital; aged 58; died, April 29, in the Fordham Hospital of coronary occlusion.

William S. Grisell, Bartley, Neb.; Kansas City Medical College, 1899; formerly owner of the Grisell Memorial Hospital, Ransom, Kan.; served during the World War; aged 65; died, April 13, of influenza.

Taylor Hudson, Belton, Texas; Louisville (Ky.) Medical College, 1877; member and past president of the State Medical Association of Texas and the Bell County Medical Society; aged 83; died, April 24.

Albert Eugene Smith @ Craig, Colo.; Denver and Gross College of Medicine, 1904; served during the World War; aged 71; died in April, in the Fitzsimons General Hospital, Denver, of nephritis.

Samuel A. Gifford, Laurel, Ind.; Medical College of Ohio, Cincinnati, 1879; member of the Indiana State Medical Association; aged 82; died, April 26, of chronic hypertrophy of the heart and nephritis.

John Craig McAllister @ Ridgway, Pa.; College of Physicians and Surgeons, Baltimore, 1889; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 76; died, April 18.

James Finley Leeper, McConnelsville, Ohio; Starling Medical College, Columbus, 1878; member of the Ohio State Medical Association; aged 79; died, April 22, of cerebral hemorrhage.

William Augustine Hulse, Bay Shore, N. Y.; Bellevue Hospital Medical College, New York, 1883; member of the Medical Society of the State of New York; aged 79; died, April 8.

Eva S. Shaver, Chicago; National Medical University, Chicago, 1903; aged 67; died, April 6, in the Norwegian American Hospital of hypertension and chronic myocarditis.

Thomas Linley, Cleveland; Western Reserve University Medical Department, Cleveland, 1896; aged 64; died, April 6, of cerebral hemorrhage, arteriosclerosis and hypertension.

Peter Robb McArthur, Los Angeles; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1899; member of the California Medical Association; aged 69; died, April 5.

Joseph J. Gottlob, Cleveland; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1900; aged 69; died in April at the City Hospital.

Stark Armistead Sutton @ Norfolk, Va.; University of Maryland School of Medicine, Baltimore, 1894; formerly city health officer; aged 65; died, April 1, of pneumonia.

Ray Gifford Lawrence, Port Jervis, N. Y.; New York University Medical College, New York, 1898; aged 68; was found dead, April 4, of injuries received in a fall.

John H. Haizlip, Nederland, Texas; College of Physicians and Surgeons, Baltimore, 1897; member of the State Medical Association of Texas; aged 65; died, April 11.

Henry Bascom Shields, Carthage, N. C.; Atlanta Medical College, 1882; member of the Medical Society of the State of North Carolina; aged 85; died, April 15.

Ernest Albert Chapman, Dobbs Ferry, N. Y.; New York University Medical College, 1896; aged 76; died, April 1, of chronic pyelonephritis and myocarditis.

Edwin Robert Espie, Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; aged 73; died, April 25, in Weirsdale, Fla.

W. Frank Schrader, Fort Wayne, Ind.; Fort Wayne College of Medicine, 1894; aged 70; died, April 14, of hemorrhage following a gallbladder operation.

Luther L. Gilbert, Prospect Station, Tenn.; College of Physicians and Surgeons, Baltimore, 1886; aged 72; died, April 30, of aortic regurgitation.

Daniel William Lewis, Philadelphia; Jefferson Medical College of Philadelphia, 1909; aged 63; died, March 31, of cerebral hemorrhage.

Nathan R. Gregg @ Coulee City, Wash.; St. Louis College of Physicians and Surgeons, 1893; aged 64; died, April 23, of coronary thrombosis.

Lucian Mason McLendon, Dallas, Texas; Physio-Medical College of Texas, Dallas, 1905; aged 74; died, April 13, of coronary occlusion.

Robert Woodhouse Fowler, Richmond Hill, N. Y.; New York University Medical College, New York, 1897; aged 64; died, April 28.

Irving H. Edginton, Detroit; Memphis (Tenn.) Hospital Medical College, 1891; aged 68; died, April 3, of cerebral hemorrhage.

James H. Sebree, Paris, Ky.; Louisville National Medical College, Medical Department State University, 1892; died, April 16.

William Asa Smith, Glendale, S. C.; Medical College of the State of South Carolina, Charleston, 1891; aged 69; died, April 11.

Dunklin Pierce McLaurin, Jackson, Miss.; University of Tennessee Medical Department, Nashville, 1892; aged 78; died, April 4.

Berthold P. Bebee, St. Louis; St. Louis University School of Medicine, 1903; aged 57; died, April 22, of a gunshot wound.

Joseph A. Smith @ Chicago; Chicago College of Medicine and Surgery, 1909; aged 54; died, April 3, in Miami Beach, Fla.

Max Finkelstein @ New York; University of Maryland School of Medicine, Baltimore, 1916; aged 50; died, April 25.

James Moore, Trowbridge, Ont., Canada; Trinity Medical College, Toronto, Ont., 1900; died, April 10, in Listowel.

John Ballinger Eads, Lexington, Ky.; University of Louisville Medical Department, 1897; aged 67; died, April 26.

Charles Walden, Harrisburg, Ill.; St. Louis College of Physicians and Surgeons, 1909; aged 65; died, April 25.

Wesley John Reid, Detroit; Michigan College of Medicine and Surgery, Detroit, 1898; aged 63; died in April.

Robert James Liles, Tyler, Texas; Memphis (Tenn.) Hospital Medical College, 1893; aged 77; died, April 22.

Lewellyn D. Hixson, Ann Arbor, Mich.; Detroit College of Medicine, 1897; aged 65; died, April 18.

Bureau of Investigation

SOME MISCELLANEOUS MAIL-ORDER FRAUDS

For many years the Post Office Department has done splendid service in protecting the public against medical frauds that operate through the United States mails. The task is a difficult and a thankless one. Unfortunately, few newspapers and magazines publish the results of the work done by the Post Office Department. In the nature of the case, the majority of such frauds have been made possible through the carelessness or venality of some newspapers and magazines which open their advertising pages to the fraudulent concerns.

In certain instances in which the frauds have been particularly successful in a financial way the men behind them have wielded no little political influence, and cases are on record in which in the past the official positions of influential politicians have been used in the interest of the medical mail-order faker and against the work of the Post Office Department.

This department of THE JOURNAL has for more than a quarter of a century abstracted, usually in some detail, the cases of medical mail-order fraud in which, through the activity of the Post Office Department, the exploiters have been debarred from the use of the United States mailing privileges. Some of the frauds, in the nature of the case, are comparatively trivial. Others are such as to have brought the men who conduct them large fortunes. In this issue we give in brief form the essential facts regarding some comparatively small-bore medical swindles against which fraud orders have been issued recently. These miscellaneous fakes cover such fields as alleged cures for obesity, diphtheria, tuberculosis and diabetes:

DELATOL LABORATORIES.—This was a fraudulent alleged cure for diabetes that was marketed by one Frank Willard Kimball from Oakland, Calif. Kimball had also been associated with the Melatol Laboratories of San Francisco, which sold another fake cure for diabetes. In October 1935 Kimball was convicted of violating the Food and Drugs Act in connection with his activities in the Melatol Laboratories and was fined \$400. In January 1937 the Melatol Laboratories were debarred from the mails. Kimball advertised that his so-called Delatol treatment would cure diabetes. The "treatment" consisted of tablets and "Herb Tea." Government analyses showed that the tablets consisted essentially of laxatives (senna, licorice, and the like), while the Herb Tea was mainly sassafras bark, licorice root, mistletoe leaves and stems, juniper berries and mint leaves. In other words, the Herb Tea, like practically every fake cure for diabetes, was essentially a diuretic. The scheme in such cases consists in causing the patient to pass a larger amount of urine daily, so that any given specimen contains a smaller proportion of sugar, although the actual sugar excretion may be increased. Kimball was not a chemist, pharmacist or physician and had no medical training. His scheme was declared a fraud, and a fraud order was issued against the Delatol Laboratories and against Frank Willard Kimball on Feb. 24, 1938.

JOSEPH W. HOLLAND.—From Danville, Ala., one Joseph W. Holland and his two sons, Hubert and Alvin J., advertised and sold through the mails a booklet entitled "Tuberculosis and Pneumonia, Their Cause, Symptoms, Treatment and Prevention." It was represented that this booklet contained information on how to cure tuberculosis and certain other diseases. The business was started at Florence, Ala., in 1933 but later moved to Danville. Holland was formerly a school teacher. He asked \$1.25 for his booklet. There was also worked, in addition, the trick-prescription fake. Holland told his victims that "Dr. Hull's Prescription" was a good one but that only a few drug stores would carry the medicines necessary to fill the prescription. Holland offered to get it filled for \$1.50. Investigation by the Post Office authorities showed that Holland's so-called treatment was contrary to modern practices employed in the treatment of tuberculosis and in many instances would prove distinctly harmful to sufferers from tuberculosis. The Hollands had no physicians, chemists or pharmacists connected with their business and none of them had any medical training. The government declared that such an attempt by inexperienced

laymen to treat a disease as deadly as tuberculosis was a danger to the public health. On June 1, 1938, the mails were closed to Joseph W. Holland and Joseph W. Holland and Sons.

EDWARD J. McCANN and TONSOL.—From Elmira, N. Y., Edward J. McCann sold through the United States mails a preparation that he called "Tonsol," for the alleged treatment and cure of diphtheria and tonsil infections. The business was started in 1922. When analyzed by the government chemists, Tonsol was found to be essentially a 15 per cent solution of mild silver protein (argyrol type). The danger, not only to the individual but to the community, of attempting to treat diphtheria with a spray sold on the mail-order plan, is obvious. During the hearing the postal authorities brought out the fact, well known to physicians, that in addition to diphtheria the tonsils may be the site of syphilitic ulcers and cancers and are also usually acutely inflamed in scarlet fever. Obviously, spraying such tonsils with Tonsol would be not merely ineffective but dangerous to the patient, because of the neglect of proper treatment. McCann had no medical education or training and had no one with such qualifications connected with his business. Tonsol was manufactured by McCann and his wife at their residence, despite the fact that neither of them had any education or training in chemistry or pharmacy. On Feb. 24, 1938, a fraud order was issued against E. J. McCann and Tonsol.

SLENDRA LABORATORIES.—This was another Elmira, N. Y., medical mail-order fake. Slendra Laboratories was a trade name used by Joseph H. Updyke, whose regular business was that of conducting a lunch room. In other words, Mr. Updyke seemed to work both sides of the street—he sold foods that presumably would increase the weight, and he also had some pills that were alleged to reduce weight. When analyzed in the government laboratories, Mr. Updyke's tablets were found to contain about one-tenth grain of iodine and one-half grain of phenolphthalein, with a small amount of leptandrin, corn starch, chalk and mineral oil. In common with most obesity-cure quacks, Mr. Updyke so advertised as to lead prospective victims to believe that neither dieting nor exercise was necessary in order to secure the reduction of weight promised as a result of using his Slendra tablets. After the victim had parted with his money, however, he was told that if he wished to get thinner he should not eat pork, ham, bacon, any fat meat, olive oil, butter, cream, cheese, sugar, candy, pastry, potatoes, sardines in oil or bananas; he was also told to get some exercise in the open air every day! If such a regimen were followed, the Slendra tablets could, of course, have been thrown in the ash-can and just as good results obtained. While the amount of iodine in Updyke's tablets was not sufficient to produce a reduction in weight, it might, in certain cases, produce thyroid poisoning. No physicians, chemists or pharmacists were connected with Mr. Updyke's business, and in the government report on the case it seems that Mr. Updyke cynically admitted to the Post Office Inspector who investigated the case that he did not think that Slendra would cure obesity. On March 16, 1938, the Slendra Laboratories were debarred from the United States mails.

WEIGHT CONTROLS

Cataracts Develop Following Use of Anti-Fat Nostrum

In spite of the warnings from the medical profession and public health officials against the use of secret remedies sold for the alleged reduction of weight, products of this type continue to take their toll. During the past year the Bureau of Investigation has received reports from physicians of serious results following the use by patients, on their own responsibility, of a piece of mail-order quackery sold as a "fat cure" under the name of "Weight Controls." The product, which is reported to come in capsule form, was sold by Weight Controls, Inc., House of Health Building, 33 West 47th Street, New York City.

From tests made in October 1937 by the A. M. A. Chemical Laboratory of the contents of some of the capsules sent in by physicians as being Weight Controls, it appeared that the active ingredient of this nostrum was either dinitrophenol or a closely allied substance, dinitrocresol.

Dr. J. J. Hanna of Quanah, Texas, reported the case of a 21 year old woman who came to his office complaining of

poor vision. She was overweight and for four and a half months she took capsules which she said she purchased from Weight Controls, Inc. These reduced her weight some 46 pounds, but her vision was reduced to light perception in the right eye and 20/200 in the left, and that eye failing fast.

The State Medical Society of Wisconsin reported that Dr. E. E. Neff of Madison, who had been cooperating with the society in making a study of cataract cases resulting from the use of reducing capsules, reported the case of one cataract patient who had allegedly used a product sold and distributed by Weight Controls, Inc.

Dr. Alton V. Hallum of Atlanta reported that he had a patient who claimed to have taken two boxes of Weight Controls capsules, lost about 25 pounds weight and in a few months developed bilateral cataract.

Drs. Dodd and Hamner of Petersburg, Va., reported the case of a patient who allegedly took Weight Controls and developed cataract and became totally blind in both eyes within twelve days.

Dr. J. B. Nail of Wichita Falls, Texas, has reported the case of an obese young woman who came to him for examination, complaining of loss of vision. She was found to have bilateral cataract and gave a history of having taken Weight Controls.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ACTIVITIES OF CHILD HEALTH COMMITTEE IN COUNTY MEDICAL SOCIETY

To the Editor.—Have you any information of value in line with the activities of a child health committee of a county medical society? I will greatly appreciate any suggestions you have to offer.

C. HAYDEN PHILLIPS, M.D., Wilkes-Barre, Pa.

ANSWER.—These activities might include the following, or as many of them as are appropriate in a local situation:

1. The community water supply and its relation to sewage disposal and other sanitary questions should be studied. A safe water supply is a fundamental necessity for a satisfactory state of child health, since advice to boil water before feeding to infants is not universally followed among ignorant mothers.

2. The source, handling and distribution of the community milk supply should be studied, with particular reference to availability of fresh pasteurized milk from tuberculin tested herds, delivered in properly capped bottles. A safe milk supply is fundamental for satisfactory child health conditions and it is generally agreed that minimum requirements are tuberculin tested herds, clean barns and milk houses, clean, healthy workers, clean utensils, prompt cooling and delivery of milk, pasteurization (except certified milk) and bottling.

3. Investigation should be made into the availability of health supervision for well babies for all classes of the population, each at an appropriate price. This means that families which can pay for supervision of their own babies should do so through appropriate relationships with private physicians of their own choice, but it also means that provision must be made for similar care for those unable to pay. If this problem is faced and solved by the medical society, there will be no occasion for other community groups to put forward solutions of their own which may be inequitable or otherwise unsatisfactory.

4. Provision should be made in the community, through health department or county medical society channels or jointly, for a constant program of parent education with relation to health. This would include use of the radio, if available, and of newspapers, pamphlets, physician speakers and other methods, such as the occasional use of exhibits and motion pictures.

5. Provision should be made through the offices of private physicians, or by other means worked out cooperatively between the health department and the local medical profession, to insure immunization against smallpox, diphtheria and perhaps whooping cough, during the first year of life for all children. As stated before, financial arrangements should be appropriate to the financial capacity of the family; but, whether pay or free, the work should be done wherever possible through the office of a physician chosen by the family.

6. The community hospital facilities for children should be studied and inadequacies or inequalities, if any are discovered, should be called to the attention of the community with appropriate suggestions for remedial measures.

The following material has been published by the American Medical Association Bureau of Health and Public Instruction, dealing with the relationship of physicians to the public health program both as regards relationships with public health officials and in connection with their public health and health education responsibilities. It will be sent free on request to physicians:

Health Education Over the Radio.
Authenticity of Health Education Materials.
The Health of the School Child.
Cooperation in Preventive Medicine.
The Doctor as a Health Educator.
Opportunities and Obligations in Health Education.
Helping the Doctor in Health Education.
The Physician's Place in the Health Program.
Practicing Physicians and the Public Health Workers.
Teaching the Public About Health.

Other sources of information include the state department of health, the United States Public Health Service, Treasury Department, Washington, D. C., and the United States Children's Bureau, Department of Labor, Washington, D. C.

OBLITERATIVE PLEURITIS IN PULMONARY TUBERCULOSIS

To the Editor.—What is the etiology of obliterative pleuritis occurring during the course of artificial pneumothorax for pulmonary tuberculosis? Is it necessarily progressive? If so, how long would it take for the pleural cavity to become obliterated if the degree of pulmonary collapse is about 75 per cent? Assuming that the process began with the formation of fluid (hydropneumothorax) would the spontaneous disappearance of the fluid retard the progress of the disease? If the pleural cavity should become completely obliterated, would the lung necessarily reexpand completely? Does the process give any information regarding the underlying parenchymatous lesions? What is the ultimate prognosis? What is the treatment?

M.D., New York.

ANSWER.—This condition is caused by a combination of factors, the most important of which is fluid in the pleural cavity, usually caused by infection. The quality of fluid is important. Simple transudates are rather easily resorbed without any after-effects; but serous exudates, particularly those caused by infections with the tubercle bacillus, are prone to cause the pleural surfaces to adhere on resorption of the fluid. An added factor is the content of fibrinogen. The more fibrinogen present the heavier will be the clot and in turn the quicker will be organization by fibrosis. Any acute purulent infection that tends to destroy this "grundlage" of fibrosis will militate against obliterative fibrosis. The mechanism is chiefly an irritation of a surface of the pleura in the region of a tubercle; then a lymph node or other obstruction prevents a return flow of lymph toward the hilus of the lung and this is followed by the accumulation of fibrinous exudate, as mentioned. First, a fibrinous exudate forms between the pleural layers, which undergoes a monoeytic infiltration, followed by fibroblasts and capillaries (granulation tissue) and ultimately fibrous tissue; second, adhesion of the two layers may take place without the fibrinous exudate, but in such cases the two layers are "semidry." They usually have previously undergone varying degrees of inflammation, most commonly by the tubercle bacillus. In the latter instance it is a "creeping" process. The new fibrous tissue draws in new pleural surfaces and continues on till the whole cavity is frequently obliterated by thin "spider-web" adhesions.

The time required to obliterate a cavity 75 per cent collapsed is variable. If proper collapse is kept up it need not become obliterated at all. Occasionally the "creeping" type will obliterate any cavity in periods ranging from two to four months. The spontaneous disappearance of the fluid will augment rather than slow down obliteration, if it has the proper basis (fibrinous exudate). Transudates are resorbed without such a result. The lung will never reexpand completely because of fixation, but almost complete expansion may result if the fibrosis is not too dense. Dense fibrosis will sometimes encase the lung so that expansion is almost nil. There is no relation to the underlying lung lesion any more than that the infection usually emanates from a subpleural lesion. It is predominantly a pleural process.

The prognosis depends on the extent of underlying lung lesion, usually tuberculosis.

There is no treatment unless the lung lesion is due to an abscess, when resection and drainage may effect a cure, or to tuberculosis when a thoracoplasty may, and usually will, accomplish the result. In bilateral disease these operations may not be possible.

MENTAL AND PHYSICAL DEVELOPMENT IN PREMATURE INFANT

To the Editor:—A female infant weighing 4 pounds (1,800 Gm.) was delivered in September 1936 at about the eighth month of gestation. The delivery was normal and the child gained rapidly in weight: at 6 months 11 pounds (5 Kg.) and now at 17 months 21 pounds (9.5 Kg.). She has received cod liver oil and orange juice since 3 weeks of age and simlac almost from birth. At about 15 months of age she could neither sit straight by herself nor walk. She could stand erect by herself for a short time when supported, but when she was sitting her head drooped forward and her back arched. The first tooth appeared at 10 months and she now has eight. Her anterior fontanel is open and measures 1.5 cm. in diameter. X-ray examination of the wrist suggests healed rickets. She does not speak but seems to have normal intelligence. For the past six weeks she has had vitamin D and drisdol. She has been given ultraviolet radiation and a grain of desiccated thyroid daily for the past four weeks. She has improved slightly and sits somewhat more erect but not for any length of time. Suggestions as to diagnosis, prognosis and treatment will be appreciated.

M.D., Ohio.

ANSWER.—From the data presented it is obvious that the infant was premature. The fact that the child at 17 months does not sit up well is rather suggestive of cerebral injury, possibly a result of a cerebral hemorrhage, which occurs far more frequently in immature infants than in those born at full term. Development in prematurely born infants may be considerably delayed. Mental development, although somewhat slower than normal, is not usually so long delayed as is evidenced in this case. More detailed data, with employment of the Gesell Schedule as a basis, is required before any definite conclusion can be reached. The prognosis at the present time should be guarded and the child carefully watched as to the mental factor. Chances are fairly good that the intelligence will be impaired, although one is not justified in making this commitment to the family on the basis of the little evidence presented or without a longer period of observation. If she still has not progressed favorably after several months more, encephalography should be considered for the purpose of establishing the amount of cerebral tissue present. This, of course, is of value only from a prognostic point of view and not in any therapeutic sense.

The nutritional state of the infant sounds fairly good, although slightly below the expected level. The only treatment is to continue with all possible dietary aids. Whole milk in place of the artificial feeding would perhaps be beneficial.

Thyroid is good therapy, although it should not be given constantly. In addition, a full baby diet with plenty of vegetables, chopped meats, cottage cheese and fruits should be given. If three teaspoonfuls of one of the fortified cod liver oils now available are given daily, no further vitamin D is needed. Calcium in the form of calcium gluconate, a drachm (4 Gm.) in the day's milk supply, may help. In addition a few grains of iron and ammonium citrate mixed with a little yeast extract should be given to the infant as a further tonic.

ROENTGENOGRAPHY OF MASTOID

To the Editor:—Has any one ever done any research on the condition of the mastoid process, after definite involvement as indicated by x-ray examination, and on the x-ray appearance of this process after operation?

M.D., Iowa.

ANSWER.—A search of the literature of the last few years does not indicate any work in which there was a definite attempt to correlate what was found in the mastoid process after there was x-ray evidence of disease. The roentgenogram is a very valuable adjunct in the diagnosis of suppurative conditions of the mastoid process. Its use, however, unless coupled with experience and judgment, is apt to be fallacious. From the very beginning of an otitis, with its concomitant congestion of the mastoid process, there is x-ray evidence in the way of cloudiness in the mastoid area. Increased blurring and disappearance of the bony trabeculae are shown in the more advanced forms of the disease. With few exceptions the evidence given in the first week of an otitis is not of such a nature as to determine surgical intervention, and this is true also of mastoiditis which is more developed. The clinical observations determine the course and the treatment of the disease. The roentgenogram does tell how well pneumatized the mastoid process is, for example. Every otologist of experience has had occasion to compare what he has found at operation with what he saw on the x-ray film, and most men of experience are agreed that the x-ray evidence is often deceptive. Conditions found at operation may be frequently more extensive than indicated by the x-ray evidence, and the reverse also is true. X-ray examination may lead one to believe that there is extensive destruction and

the surgeon may find only a moderate involvement. It often happens, furthermore, that there will be a need for repeated x-ray examination after operation because the patient is not doing well. The large central operative cavity is usually clearly marked and, in addition, one can see those cells which the operative procedure cannot completely remove and also the cells of the petrosal part of the temporal bone, which are invaded by the surgeon in only a small percentage of cases.

The earlier stages of mastoid disease and the milder forms followed by recovery are seldom, if ever, noted because there is no need for surgical intervention. In cases in which surgical operation has been found necessary it is seldom that the pathologist gets to examine anything more than a number of bone fragments which are removed.

PAINFUL NOCTURNAL ERECTIONS NOT DUE TO TABES

To the Editor:—A man, aged 65, Jewish, had tabes about twenty-five years ago, after having contracted syphilis from twelve to fifteen years previously. He received the routine medication but was rather careless. Now he has almost all the principal symptoms of tabes but is able to attend to his business and would be more or less comfortable if not for one particular kind of attack, which occurs whenever he falls asleep. It consists in painful erection (devoid of any sexual feeling) always accompanied by a severe tingling sensation involving the whole body, reaching such a degree of painfulness that he can get rid of it only by forcing himself to wake up. The intensity of the sensation is in direct proportion to the soundness of his sleep and gradually disappears after he wakes up: first the erection and then, gradually, the tingling sensation. The attacks are getting more severe and the patient is developing a suicidal complex. What is the mechanism of this sensation, what is its connection with falling asleep, and what suggestions for therapy can be made?

M.D., Pennsylvania.

ANSWER.—The painful nocturnal erections of which this patient complains are almost certainly not associated with tabes dorsalis. If they rest on any organic basis they are probably due to a local lesion in the urinary tract. It is barely possible that they may be associated with overfilling of a neurologic bladder, but it is rather more likely that they are due to a hypertrophied prostate. Examination by a urologist is essential. If no organic lesion is found in the genito-urinary tract, the attacks are almost certainly on a psychic basis and, since the patient has become suicidal, he should be under the care of a psychiatrist.

PRESACRAL SYMPATHECTOMY AND PELVIC PAIN

To the Editor:—I have been hesitant about doing sympathectomies for severe dysmenorrhea, in fear of masking the pain of some future acute pelvic condition. Please give me the general consensus as to the safety of either lumbar or presacral sympathectomy during the reproductive period, especially from the standpoint of the effect on symptoms of possible future abdominal (pelvic) crises.

M.D., New York.

ANSWER.—Thus far there have been no reports of acute pelvic or abdominal crises following presacral sympathectomy. This operation will relieve pain which arises in most pelvic organs but by no means all of them. It will eliminate dysmenorrhea and pain due to carcinoma of the cervix, the body of the uterus and the bladder but not pain due to ovarian involvement. Most of the pain due to a ruptured ectopic pregnancy or twisted ovarian cyst is due to an irritation of the visceral and parietal peritoneum. The sensation of this pain is not transmitted through the sympathetic system but through the spinal cord. Hence, presacral sympathectomy may be performed for dysmenorrhea without any concern about the masking of pain in future pelvic and abdominal crises.

DEMONSTRATION OF BENZENE IN URINE

To the Editor:—Would you kindly outline the "urine sulfate test" as used in the detection of benzene intoxication?

M.D., Indiana.

ANSWER.—The test for benzene in the urine is the same as that for phenol. Urine that contains benzene or phenol becomes brown on standing. Benzene and phenol may also be demonstrated by distillation. The urine is strongly acidified with hydrochloric acid and distilled. To the first few cubic centimeters of the distillate is added 10 per cent ferric chloride solution drop by drop, and if phenol or benzene is present there will appear a deep amethyst blue color.

One tenth of the sulfates in the urine appear in combination with aromatic substances such as indole, phenol, benzene and skatole and are called ethereal sulfates. These are tested for by the Obermayer indican test as follows: To one third of a test tube of urine is added one third of a test tube of Ober-

mayer's reagent. To this mixture is added a few cubic centimeters of chloroform. The mixture is warmed slightly before the addition of the chloroform, and the tube is inverted several times to insure proper mixing. If indican is present in excess, the chloroform which settles to the bottom of the tube will assume an indigo blue. Conditions that lead to an excess amount of indican in the urine are diseases of the small intestine, slow flow of bile and absorption of exudates. In the absence of the aforementioned diseases, if there is an increase of indican in the urine, the urine should be distilled and benzene demonstrated in the distillate.

CATARACT AFTER TUBERCULOSIS AND GLAUCOMA

To the Editor:—A patient has a tuberculous condition of the right eye, which was diagnosed clinically and microscopically ten years ago. A few years later glaucoma set in and an iridectomy was performed to relieve tension. Injections directly in the eye were given with no avail. Later there were occasional exacerbations with adhesions developing. Now the lens of the eye is distinctly opaque (cataract formation) and vision is restricted to light perception. The tension of the eye is practically normal. There is considerable pain in the eye. The patient is eager to have the cataract removed. Would this be advisable, in view of the tuberculous history? Would the removal affect the good eye or would it be advisable to remove the entire eye?

DAVID GLASS, M.D., Louisville, Ky.

ANSWER:—If the eye is quite free from active inflammation as shown by freedom from fresh deposits on the cornea and some cells in the anterior chamber, it would probably be the best plan to remove the lens and at the same time to do an iridectomy. There would be some chance that this might stir up an attack of inflammation but it should be possible to control by foreign protein injections and atropine afterward. It is also quite likely that pathologic changes will be found in the fundus or opacities in the vitreous which will prevent a good visual result so that the patient should be prepared for this. There should be no more danger to the good eye than after any operation for cataract, although one should be sure that there is no inflammation in that eye which might be present in spite of the normal vision.

DYEING HAIR

To the Editor:—A patient engaged in the daily practice of dyeing hair has vitiligo and scattered tufts of white hair on the scalp. These tufts fail to take the dye by the same methods used on others. Is this experience unusual? Is there any particular kind of dye which can be tried in such a case? Jackson and McMurtry (*Diseases of the Hair*, Philadelphia, Lea & Febiger, 1912, p. 359) say that the use of hair dye will conceal this condition. I have not found this point discussed in other textbooks consulted.

M.D., Rhode Island.

ANSWER:—The idea has long prevailed that hair has individuality. One person's hair takes dye much more readily than does another's, although the two may appear of the same texture. One person's hair may color well with vegetable dye and poorly with metallic dye, while hair apparently of the same texture and oiliness on the scalp of another person may give just the opposite reaction, dyeing well with metallic but poorly with vegetable dyes. Even hair in different places on the same scalp may show a difference in respect to dyeing. Gray hair is particularly hard to dye.

Galewsky writes (*Handb. d. Haut u. Geschlechtskr.* 13:165, 1932) that the beard and scalp hair of the same man will differ in respect to dyeing. Soft fine hair is harder to dye than coarse stiff hair. According to the hardness of the cuticle of the hair, the color will penetrate better and be more lasting. Later growing hair, which has more fat and less keratin, often gives a different color and the same is true of the parts next the scalp as the hair grows out. Variations in sulfur content, the effects of nervous disease, attacks of migraine and circulatory disturbances are thought to affect the ease with which hair can be dyed.

Washing with soap and water is a good preparation for dyeing, and in some instances the use of a weak alkali or of hydrogen peroxide may be a necessary preliminary to the application of the color. Strong defatting agents, ether, benzene or carbon tetrachloride are said to dry the hair too much and make dyeing more difficult.

For the management of the case in question it seems advisable to try different dyes until one is found that will affect the gray hair. Sabouraud's suggestion, that all persons who wish to have the hair dyed should first have the dye tried on a small spot to determine how well the dye takes and whether the individual is sensitive to it, is a good one. When the most suitable dye has been found, the white patches should be dyed first until they approach in color the rest of the hair. A patch which includes both light and dark hair is then dyed and if the result is satisfactory the whole may be dyed. No sugges-

tion as to the particular dye can be made. It should be understood that all dyes are potentially dangerous; but, if the patient insists that the hair be dyed, the dye most familiar to the operator should be preferred if there are several that seem to give good results.

MORTALITY IN APPENDICITIS

To the Editor:—Where can I get some definite information on the mortality rates in untreated cases of acute appendicitis? Have any such figures been compiled for the period before the advent of appendectomy? Of course, I know that the operative mortality for chronic appendicitis is practically nil and that the mortality for gangrenous appendicitis with peritonitis is about 20 to 25 per cent, depending on the different operators. What I am especially interested in is the mortality figures for appendicitis when no surgical treatment was received at all.

BENJAMIN A. FURMAN, M.D., Newark, N. J.

ANSWER:—Any statistics compiled before the surgical treatment of acute appendicitis would be of no value, because when this condition gradually came to be recognized clinically the patients were frequently operated on. At first only the late cases with peritonitis were diagnosed, many of the patients being moribund. Earlier clinical diagnosis and operation soon led to a reduction of the mortality. It is not infrequent at the present time to see a patient develop peritonitis from a ruptured appendix while under the observation of a physician inexperienced in surgical diagnosis.

Mortality following operation for chronic appendicitis may occur from the common or even unusual postoperative complications, but it increases more directly with the inexperience of the surgeon. In recent years it has been considered to be good practice in many cases of acute appendicitis with perforation and well localized peritonitis to treat without operation. Several months later the appendix should be removed. Other surgeons of wide experience operate in all cases as soon as the diagnosis has been made, with equally good results.

In cases of general peritonitis, Miller and Turner (*Illinois M. J.* 72:222 [Sept.] 1937) have reported a series treated with and others without operation but are undecided as to the best procedure.

No statistics are available for nonoperative treatment of acute appendicitis, because today in all scientific institutions these patients are operated on before perforation occurs, unless some contraindication exists.

DRIPPING FROM RECTUM

To the Editor:—A farmer, aged 65, has had chronic diarrhea for the last eight months, averaging from six to eight movements a day. He has had also a persistent dripping from the rectum; brownish colored fluid has reached his shoes when he is working. There are no other symptoms. With the use of a bismuth compound the movements have been decreased to one normally formed movement a day; however, the rectal dripping persists throughout the day unabated. The history and physical examination are essentially negative except for obesity and hypotension: 109/75. Please suggest a mode of treatment to stop this dripping.

M.D., Pennsylvania.

ANSWER:—Many serious rectal conditions are associated with "dripping" of the type described. This condition has been noted with various types of proctitis, ulcerative colitis, and even anal neoplastic disease. Sometimes kraurosis ani is accompanied by this condition. Various local applications and injection treatments for kraurosis ani have been used. However, in the inquiry the results of the digital examination or of cultures and examinations of the stools and rectal discharges are not mentioned. Moreover, the appearance of the rectal lining as seen through the proctoscope or the results of roentgenologic examination of the intestine are not given. To suggest treatment without this information would be unwise.

VARIATIONS IN SYSTOLIC BLOOD PRESSURE

To the Editor:—Why is it that, when one takes several successive blood pressure readings without removing the arm band, the first systolic reading is almost always higher than the succeeding ones? What should be taken as the true systolic pressure?

LUTHER W. HUGH, M.D., Millersburg, Ohio.

ANSWER:—There are two reasons for the difference in readings. Even apparently stolid and phlegmatic persons frequently feel some apprehension as the blood pressure is taken and hence the first reading is found at a higher level. Also the muscles of the arm are held tense and constricted, especially if the arm is not in a comfortable position, causing a higher reading. As the patient gains assurance, the arm is relaxed and the muscles do not respond to the increased pressure of the cuff, with involuntary contraction, as at first. Care taken to have the

arm in a comfortable and relaxed position will help obviate a high reading due to muscle tension in some cases.

It is a good plan to record the initial reading and also the last reading after the patient is reassured and relaxed. It gives some idea of how much the patient responds to nervous stimuli.

DIPLOPIA AND STRABISMUS FOLLOWING SPINAL TAP IN SYPHILITIC PATIENT

To the Editor:—A white woman, aged 26, was given a twelve months course of nearsphenamine seven years ago at the time her marriage. When I first saw her, nine months ago, she was in the sixth month of her first pregnancy. She was then given weekly injections of a bismuth compound and nearsphenamine. The pregnancy was uneventful except for a positive cord Wassermann and blood Wassermann test on the baby. The mother's blood Wassermann reaction has remained positive in spite of continued treatment. Three weeks ago I did a spinal tap; the fluid was entirely negative. For a week afterward the patient suffered severely from nausea, vomiting, headache and dizziness on arising. Then she noted diplopia of the right eye and had to cover the eye in order to see clearly. Shortly after this I noted a strabismus, which has persisted together with the diplopia. The other symptoms have cleared up. Examination of the eyes reveals nothing further. Could you explain the mechanism underlying these phenomena? What treatment, if any, should be given? The blood Wassermann reaction of the patient was positive (4 plus) when I first saw her.

M.D., New York.

ANSWER:—As the affected eye muscle is not named, it can only be inferred that either the third or the sixth cranial nerve is involved. In spite of the negative spinal fluid tests there is probably a syphilitic lesion at the base of the brain involving one of these nerves. The upheaval caused by the loss of the fluid cushion has brought about a change in position of one of these nerves, resulting in a partial paralysis. The latter will probably soon subside and may have been a blessing in disguise, as it shows that treatment for neurosyphilis is indicated. In view of the long duration of the syphilis in this case a course of tryparsamide is indicated. It is recommended that only 1 Gm. intravenously be given for the first dose, 2 Gm. four days later, and if the optic nerves show no signs of being affected, 3 Gm. may then be given every week for six doses. After a rest period of a month it will be well to repeat the course even if the strabismus has cleared up. Subsequent treatment will have to be planned according to the condition of the patient.

PHYTOSTEROLS AND PHENYLMETHYL BARBITURIC ACID

To the Editor:—What common plants and animal tissues used for food by human beings contain phytosterols? If phenylmethylmalonylurea is marketed in this country, what is the proprietary name or names?

I. D. CLARK JR., M.D., Fargo, N. D.

ANSWER:—Phytosterols, a group of sterols similar chemically to cholesterol, occur only in plants, where they are found especially in the oils of seeds. Sitosterol is the principal plant sterol of wheat and barley germs, cottonseed oil and laurel oil. Stigmasterol is present in the calabar bean, beet oil, coconut oil, theobroma oil and corn oil, which contains dihydrositosterol also. Phytosterols are not absorbed in significant amounts through the intestinal walls of ordinary laboratory animals and are believed to have no significance in the sterol metabolism of man.

According to available information, phenylmethyl barbituric acid (phenylmethylmalonylurea) is not marketed in this country at the present time.

VISUAL EFFICIENCY AND VISUAL ACUITY

To the Editor:—Why isn't visual acuity equal to visual efficiency? If this is fully answered in any available place, please tell me where. The test chart, American Medical Association rating, has visual acuity and visual efficiency on it. At 1.0, or 20/20 visual acuity, the visual efficiency is 100 per cent. That is the only place where they are equal. At 0.10, or 20/200 visual acuity, the visual efficiency is 20 per cent, just double.

M.D., New York.

ANSWER:—Visual acuity, as expressed by reading of the Snellen charts, describes only the results of examination under the conditions of the test. 20/40, for instance, means only that letters are read at 20 feet which should be read at 40 feet. The committee on estimation of industrial loss of vision in 1925 estimated the loss of efficiency represented by these figures and arrived at the figures given in its report. Most ophthalmologists put in their records the fraction of the Snellen chart, 20/20, 20/40, and so on, and give the industrial efficiency only in reports involving visual loss in industrial cases. These figures describe only loss of central vision; losses of motility or visual field are estimated separately and totaled as described in the report.

ANAL FISSURES IN INFANT

To the Editor:—A baby 6½ months old has fissures circumanally that are entirely outside the mucocutaneous junction. They have appeared and disappeared since shortly after birth. The child has been on a diet of evaporated unsweetened milk and a mixture of maltose and dextrin. It weighs approximately 18 pounds (8 Kg.). Treatment has consisted of keeping the bowel movements soft by regulation of diet and care to keep the child dry at all times. An anesthetic ointment has been used also without much apparent benefit.

M.D., Indiana.

ANSWER:—The treatment for the anal fissures should be satisfactory. While it is stated that care is taken to keep the child dry at all times it is not always possible to do this. It might be advisable to add from one to two heaping teaspoonfuls of boric acid powder to the water in which the diapers are boiled. If the fissures persist they may be treated by touching them with a 5 per cent silver nitrate solution occasionally. This will usually aid in their healing.

AMMONIUM CHLORIDE FOR LONG PERIOD

To the Editor:—Is there any harm that could result from the continuous taking of ammonium chloride (20 grains, or 1.3 Gm., a day) over a long period? The patient is in bed with tuberculosis and has, in addition, a prostatic hypertrophy. The ammonium chloride is used not primarily as an expectorant but to keep the urine acidified. Mandelic acid with the ammonium chloride has been taken from time to time. None, however, is taken now. Please advise.

M.D., Maine.

ANSWER:—Probably no harm would result from taking 1.3 Gm. of ammonium chloride over a long period, but the question naturally arises What is the use? The object in taking the drug is to acidify the urine sufficiently to be bacteriostatic. For this purpose 1.3 Gm. would be quite insufficient in most cases. Unless the pH of the urine is 5.5 or lower, it would have little or no effect on urinary infection. If this complication is present, sulfanilamide might be tried in a daily total dosage of 2.6 Gm. over a period of a week or ten days. In the presence of residual urine, however, it may be impossible to disinfect the urine and keep it free from bacteria.

EAR AND TEMPOROMANDIBULAR JOINT SYNDROME

To the Editor:—I am interested in the work which Dr. James B. Costen, St. Louis, and others have been doing on the temporomandibular joint syndrome complex. Please let me know your opinion on these observations and whether his conclusions are accepted by a large percentage of physicians. I am interested in the subject from the otologic standpoint.

M.D., Nebraska.

ANSWER:—The work that Dr. James B. Costen of St. Louis has done on the temporomandibular joint syndrome complex has been accepted by many physicians and there is good reason to believe that pains in the region of the ear, and even as far away as the larynx as well, may be due to an arthritis in the joint. On occasion deafness of a eustachian tube type may occur, although some have stated that this condition is a rarity in their experience. Deafness of a more serious and progressive nature is more likely to be due to otosclerosis or auditory nerve degeneration and not to the condition described by Dr. Costen.

There is evidence that some members of the profession have become overenthusiastic and are recommending tedious, time consuming and expensive dental manipulation for the relief of these incurable types of deafness. Tubal catarrh can be treated and cured by inflation, and the associated Costen syndrome can be relieved by proper dental care. Dr. Costen's work should receive respectful attention, but overenthusiasm is to be deprecated and avoided.

STERILIZING SYRINGES WITH ALCOHOL

To the Editor:—I should like information relative to the sterilization of hypodermic syringes and needles by immersion in 70 per cent alcohol. If a syringe should be kept in such a solution in a special container in my kit, would the small amount of alcohol remaining in the syringe interfere in any way with the action of the usual vaccines given (catarrhal, Sauer's, Schick test)?

M.D., Texas.

ANSWER:—The accepted method for preparing the needle and syringe for subcutaneous, intradermal or intramuscular injections is by boiling in distilled water or by autoclave. Most of the usual vaccines and the specific toxins employed in the Schick and Dick tests contain globulins or globulin fractions that might be precipitated or interfered with by alcohol in the syringe. In using certain undenatured bacterial antigens it is specifically recommended that the needle and syringe be sterilized by boiling or hot air, as alcohol or other antiseptics carried into the vial will denature the antigen. Finally, sterilization produced by proper boiling or hot air is probably much superior to sterilization obtainable by using 70 per cent alcohol.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALASKA: Juneau, Sept. 6. Sec., Dr. W. W. Council, Box 561, Juneau.
ARKANSAS: Little Rock, Nov. 3-4. Sec., State Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana.

CALIFORNIA: Reciprocity. Los Angeles, July 11, San Francisco, Sept. 14, and Los Angeles, Nov. 16. Written examinations. Los Angeles, July 11-14, and Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: Medical (Regular). Hartford, July 12-13. Endorsement. Hartford, July 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. Medical (Homeopathic). Derby, July 12. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 12-14. Reciprocity. Dover, July 19. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: Washington, July 11-12. Asst. Sec., Commission on Licensure, Mr. Paul Foley, 203 District Bldg., Washington.

HAWAII: Honolulu, July 11-14. Sec., Dr. James A. Morgan, 48 Alexander Young Bldg., Honolulu.

IDAHO: Boise, Oct. 4-5. Commissioner of Law Enforcement, Hon. J. L. Balderston, 205 State House, Boise.

ILLINOIS: Chicago, Oct. 18-20. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

IOWA: Basic Science. Des Moines, July 12. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.
MASSACHUSETTS: Boston, July 12-14. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEVADA: Reciprocity. Carson City, Aug. 1. Applications must be completed and on file by July 17. Sec., Dr. John E. Worden, Capitol Bldg., Carson City.

NEW HAMPSHIRE: Concord, Sept. 15-16. Sec., Board of Registration in Medicine, Dr. Fred E. Clow, State House, Concord.

NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. Le Grand Ward, 135 Palace Ave., Santa Fe.

NEW YORK: Albany, Buffalo, New York, and Syracuse, Sept. 19-22. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

OKLAHOMA: Basic Science. Oklahoma City, Dec. 7. Sec. of State, Hon. Frank C. Carter, State Capitol Bldg., Oklahoma City.

OREGON: Basic Science. Corvallis, July 16 and Portland, Nov. 19. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PUERTO RICO: Santurce, Sept. 6-10. Sec., Dr. O. Costa Mandry, Box 3854, Santurce.

SOUTH DAKOTA: Rapid City, July 19-20. Director of Medical Licensure, Dr. B. A. Dyar, State Board of Health, Pierre.

WASHINGTON: Basic Science. Seattle, July 14-15. Medical. Seattle, July 18-20. Dir., Department of Licenses, Mr. Harry C. Huse, Olympia.

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the *Notional Board of Medical Examiners and Special Boards* were published in THE JOURNAL, July 2, page 87.

Kentucky Reciprocity and Endorsement Report

Dr. A. T. McCormack, secretary, State Board of Health of Kentucky, reports nineteen physicians licensed by reciprocity and two physicians licensed by endorsement from Jan. 13 through May 3, 1938. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School	(1936)		Ohio
Rush Medical College	(1937)		Wisconsin
University of Illinois College of Medicine	(1931)		Illinois
Indiana University School of Medicine	(1930)		Indiana
University of Louisville School of Medicine	(1929)		S. Dakota
Univ. of Michigan Dept. of Medicine and Surgery	(1898)		Ohio
Columbia Univ. College of Ph	(1927)		New York
University of Cincinnati College			Ohio
Western Reserve University S			Ohio
Univ. of Tennessee College of			Tennessee
University of Tennessee Medical Department	(1900)		W. Virginia
Medical College of Virginia	(1925)		Virginia
University of Virginia Department of Medicine	(1931)		Maryland
University of Toronto Faculty of Medicine	(1922)		Michigan
School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Harvard University Medical School	(1932)		N. B. M. Ex.
University of Pennsylvania School of Medicine	(1933)		N. B. M. Ex.

Tennessee March Examination

Dr. H. W. Qualls, secretary, Tennessee State Board of Medical Examiners, reports the written examination held at Memphis, March 23-24, 1938. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty-eight candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine	(1937)		85.7
Emory University School of Medicine	(1937)		85.7

Tulane University of Louisiana School of Medicine	(1937)	85.5
University of Tennessee College of Medicine	(1938)	81.2,
82.7, 83.2, 83.7, 83.8, 84.2, 84.3, 84.3, 84.4, 84.4,		
84.6, 84.7, 84.7, 84.9, 85, 85.2, 85.3, 85.4, 85.6, 85.9,		
86.1, 86.3, 87.9, 88.7		
Universität Heidelberg Medizinische Fakultät	(1933)	82.5

Three physicians were licensed by endorsement from February 25 through May 2. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Endorsement of
Atlanta School of Medicine	(1908)	Alabama
Tulane University of Louisiana School of Medicine	(1936)	Louisiana
Washington University School of Medicine	(1936)	Missouri

New Mexico April Report

Dr. Le Grand Ward, secretary, New Mexico Board of Medical Examiners, reports the written examination held at Santa Fe, April 11-12, 1938. The examination covered 12 subjects and included 90 questions. An average of 70 per cent was required to pass. One candidate was examined and passed. Thirteen physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Chicago Medical School.....		(1938)	85.7
School	LICENSED BY ENDORSEMENT	Year Endorsement of	
College of Medical Evangelists.....	(1919),	(1936)	California
College of Physicians and Surgeons, Los Angeles.....		(1910)	California
University of Colorado School of Medicine.....		(1936)	Colorado
Bennett Medical College, Chicago.....		(1916)	Illinois
Northwestern University Medical School.....		(1937)	Washington
Indiana University School of Medicine.....		(1936)	Indiana
Harvard University Medical School.....		(1934) N. B. M. Ex.	
University of Nebraska College of Medicine.....		(1936)	Nebraska
Cornell University Medical College.....		(1930) N. B. M. Ex.,	
(1935) New York			
..... School of Medicine.....		(1927)	Texas
..... Studi di Pavia. Facoltà di			
..... (1910)			Missouri

Illinois April Examinations

Mr. Homer J. Byrd, superintendent of registration, Illinois Department of Registration and Education, reports the written examination held in Chicago, April 6-8, 1938. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Forty-eight candidates were examined, forty-three of whom passed and five failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Loyola University School of Medicine	(1936)		87*
Northwestern University Medical School	(1937)		84†
90,† (1938) 86, 86, 87, 89, 89			
Rush Medical College	(1936) 86,† (1937)		84,
85,† 86, 86, 86,† 87, 87, 87,† 89, 89, 90†			
School of Med. of the Division of Biological Sciences	(1936)		90,
(1937) 84,† 85,† 86,† 89			
University of Illinois College of Medicine	(1937)		89
State University of Iowa College of Medicine	(1936)		83†
Johns Hopkins University School of Medicine	(1936)		83
Harvard University Medical School	(1936)		85
University of Michigan Medical School	(1936)		86
University of Minnesota Medical School	(1938)		86
University of Toronto Faculty of Medicine	(1935)		86
Albertus-Universität Medizinische Fakultät, Königsberg	(1937)		83†
Friedrich-Wilhelms-Universität Medizinische Fakultät,			
Berlin	(1919) 80, (1925) 85, (1935) 84, (1936)		85†
Hamburgische Universität Medizinische Fakultät	(1920)		82
Johann Wolfgang Goethe-Universität Medizinische Fak-			
ultät, Frankfurt-am-Main	(1927)		81
Ludwig-Maximilians-Universität Medizinische Fakultät,			
München	(1912) 76, (1914)		80
University of Edinburgh Faculty of Medicine	(1931)		85

School	FAILED	Year Grad.
Chicago Medical School	(1937, 2)	(1938)
Université de Paris Faculté de Médecine	(1936)	
Regia Università degli Studi di Palermo. Facoltà di Medicina e Chirurgia	(1929)	

Twenty physicians were successful in the practical examination held for reciprocity and endorsement applicants in Chicago, April 8. The following schools were represented:

School	PASSED	Year Grad.	Reciprocity with
University of Arkansas School of Medicine	(1925)		Indiana
Emory University School of Medicine	(1936)		Georgia
National Medical College, Chicago	(1897)		Alabama
Northwestern University Medical School	(1930)		Minnesota
Rush Medical College	(1936)†		California

University of Illinois College of Medicine.....	(1934)	Oklahoma
State University of Iowa College of Medicine.....	(1919), (1934)	Iowa
Tulane University of Louisiana School of Medicine.....	(1935)†	Colorado
University of Minnesota Medical School.....	(1937)†	Minnesota
St. Louis University School of Medicine.....	(1935)†	Missouri
Washington University School of Medicine.....	(1936)†	Missouri
Long Island College of Medicine.....	(1931)	W. Virginia
Ohio State University College of Medicine.....	(1936)†	Ohio
Memphis Hospital Medical College.....	(1908)	Texas
Baylor University College of Medicine.....	(1933)	Texas
Queen's University Faculty of Medicine.....	(1923)†	W. Virginia

School	PASSED	Year Endorsement Grad. of
School of Med. of the Division of Biological Sciences.....	(1937)	N. B. M. Ex.
University of Illinois College of Medicine.....	(1937)	N. B. M. Ex.
Columbia Univ. College of Physicians and Surgeons.....	(1933)†	N. B. M. Ex.

* This applicant has completed the medical course and will receive the M.D. degree on completion of internship. License has not been issued.
† License has not been issued.

Book Notices

The Biology of Pneumococcus: The Bacteriological, Biochemical, and Immunological Characters and Activities of Diplococcus Pneumoniae. By Benjamin White, Ph.D. With the collaboration of Elliott Stirling Robinson, M.D., Ph.D., and Laverne Almon Barnes, Ph.D. Cloth. Price, \$4.50. Pp. 799, with illustrations. New York: Commonwealth Fund; London: Oxford University Press, 1938.

The Commonwealth Fund through (the late) Dr. White and his collaborators has contributed a service to medical science through its publication of this volume, which would be noteworthy even if only because it has set a precedent. As the author points out in the foreword, the motive in writing the book was to "take stock." In this instance the stock taking has been done by men who, while interested in the pneumococcus and pneumonia, have been far enough removed from the work to be unprejudiced. The title aptly describes the contents of the book, although biology, as here described, borders on romance at times. The authors have traced the evolution of our knowledge of the pneumococcus from the first observations by Pasteur and Sternberg to the present day methods of combating pneumococcal infections. It is primarily attractive to the bacteriologist and laboratory scientist, unfortunately less so to the practicing physician. Despite the breadth of the subject the book is well proportioned, including a prodigious bibliography of more than 1,500 references. The style of writing should be a model for more writers of scientific articles. It is unfortunate that the authors did not see fit in writing a book which probably will be a source book for many years to discontinue the use of "Group IV," a term which has always been a misnomer and which has already caused too much confusion. It is again refreshing to find an author who can present controversial matters, fix the issue and arrive at an unequivocal decision without appearing to be arbitrary. The final chapter, on unsolved problems, is a fitting close to a book which starts out to determine "how far the store of the bullion in the cellar is really the solid gold of truth."

Megacolon und Megacystis: Entstehung, Erkennung und Behandlung. Von Dr. Hans Wolfgang Passler, jetzt Chirurg. Univ.-Klinik Leipzig. Mit einem Geleitwort von Prof. Dr. Wilhelm Rieder, Direktor der Chirurg. Univ.-Klinik, Leipzig. Paper. Price, 15.60 marks. Pp. 172, with 67 illustrations. Leipzig: Johann Ambrosius Barth, 1938.

This is an attractive volume on megacolon and on the large bladder, which in rare cases is found associated with megacolon. Passler has seen the association in three cases and has found reports of some eighteen cases in the literature. The large bladder is likely to be seen only with those cases in which the whole colon, including the rectum, is involved. Passler first reviews the important points in the anatomy, embryology and innervation of the colon and the bladder. He then discusses Hirschsprung's disease in its various aspects. The book is well written and well illustrated. There is much on the surgical treatment of the disease not only by Passler but by many surgeons who have worked in this field. Table 4 shows that of 117 patients with apparently idiopathic megacolon operated on by neurosurgeons thirty-eight were cured, sixty-four were improved and twelve were not helped. Three died sometime after the operation. Passler summarizes briefly thirty different theories as to the cause of the disease. His

impression is that all the clinical and experimental observations point to something wrong with the sympathetic nervous system. Passler has not given sufficient prominence to the studies which have shown that Auerbach's plexus is generally absent or much thinned out in that distal part of the bowel which does not dilate. The simplest explanation for megacolon would be an absence of the local nervous system because biologists have shown that when smooth muscle is cut away from its immediate nerve supply it contracts down into a hard knot and stays that way. Actually there is no question that in some of these cases the myenteric plexus is absent. However, the fact that section of the pelvic sympathetic nerves will sometimes bring relief in cases of Hirschsprung's disease makes it appear that there is disease also in the extrinsic nerves of the bowel. Passler states, though, that men who have looked for disease in the ganglions removed at operation haven't seen much change from normal.

Passler divides cases of megacolon into three groups. In one the colon is distended only to the right of the splenic flexure. In this case, perhaps, the defect is in the superior mesenteric plexus of nerves. In the second group the whole colon except the rectum is involved, and Passler's impression is that the inferior mesenteric plexus is diseased. In the third group the whole colon, including the rectum, is enlarged, and here the hypogastric plexus may be diseased. Passler believes that treatment in these three types of cases should be different and that if nerves are cut the extent of the operation should depend on the extent of the disease. He believes that this division is of importance because the cutting of nerves is of value in only certain of the groups and not in others.

The book should be helpful to all those men who are interested in this puzzling disease. They doubtless will want to go back to the original articles in order to study them carefully. Unless a man with much detailed knowledge of the subject notes that one experimenter studied dogs under ether, another studied patients under local anesthesia and another studied cats with an abdominal window or with the roentgenologic technic, he will not be able to reconcile the many differences of opinion which he will find expressed in the many articles on the innervation of the lower part of the colon. The bibliography of nearly 400 titles will doubtless be of much value for all men working in this field.

Text-Book of Ophthalmology. By Sir W. Stewart Duke-Elder, M.A., D.Sc., Ph.D., Surgeon Oculist to H. M. The King. Vol. II: Clinical Methods of Examination, Congenital and Developmental Anomalies, General Pathological and Therapeutic Considerations, Diseases of the Outer Eye. Cloth. Price, \$15. Pp. 2,094, with 742 illustrations. St. Louis: C. V. Mosby Company, 1938.

The first of this four volume textbook was reviewed in this column June 24, 1933, with great enthusiasm. Its reception by the ophthalmologic profession was really in the nature of an ovation and the only critical works were the expressed fears that the task of producing the remaining volumes might prove too great or that the lofty standards set in the first volume were too high to be maintained. But the appearance of the second volume has set all those fears at rest. The interval of production is a bit longer than desirable, but it was worth waiting for. The publishers are to be congratulated on the excellence of their production not only from the mechanical standpoint of book-making but even more because of the fine illustrations, both black and white as well as colored. The illustrations really illustrate, so that even an undergraduate medical student can grasp the point in question. This volume deals with the clinical methods of examination, congenital and developmental anomalies, and general pathologic and therapeutic considerations of diseases of the eye and specifically of the conjunctiva, cornea and sclera. The material is presented in such a thorough and systematic manner that one marvels at what type man it is who can write so ably. His English is not stilted but flows freely and conversationally and his word pictures of ocular conditions are so descriptive that illustrations are almost unnecessary. Following each entity is a short but comprehensive bibliography that furnishes the key to all that has been written on the topic. Each important chapter is opened by a short outline of the life and work of the ophthalmologist whose name is most intimately connected with the subsequent pages. Von Graefe is naturally

given the place of honor at the beginning of the volume. This new touch in ophthalmic textbooks should prove most stimulating to the younger men who have not yet acquired the leisure to study the history of ophthalmology. It is obviously impossible to deal with individual phases of the work in a short review, for all that the reader wishes to know is what the book is about and whether in the opinion of the reviewer the book is worth while. To the latter, most emphatically, yes. It is the most complete thing that has been produced in English, it contains the last word in modern ophthalmology and it renders entirely unnecessary the long drawn out and never ending handbooks of the Teutons. Anglo-Saxon ophthalmology owes a real debt of gratitude to Duke-Elder not only for his brilliant research work but even more for his textbook.

Tumeurs Intracrâniennes: Etude analytique de 2000 tumeurs vérifiées et de leur mortalité opératoire. Par Harvey Cushing, professeur de neurologie à la Faculté de médecine de Yale, New Haven. Edition revue et augmentée par l'auteur et comprenant deux études sur les résultats éloignés du traitement opératoire des tumeurs intracrâniennes. Par W. P. Van Wagenen et Hugh Cairns. Traduction française de Jean Rossier. Paper. Price, 80 francs. Pp. 194, with 111 illustrations. Paris: Masson & Cie, 1937.

This is a French edition of "Intracranial Tumours," published by Charles C. Thomas, Springfield, Ill., in 1932. The book passed through a German edition in 1935, to which an abstract of a study of 149 cases of brain tumor eight years after operation by Dr. W. P. Van Wagenen of Rochester, N. Y., was appended. In the present edition a second study by Mr. Hugh Cairns of London of 157 other cases from eight to nine years after operation has been added. These two studies attempting to assess not only the actual postoperative survival period in months but the economic and social status of the patients during this period as well are valuable additions to this work. The original monograph by Dr. Cushing has been little changed. This monumental record of the surgical achievements of one man is thoroughly familiar to all interested American and English neurologists and neurosurgeons. It must be gratifying to all American members of the profession to have it made available to our German and French speaking colleagues. This monograph consists essentially of the surgical-mortality statistics of the various types of tumors of the brain and with the two appendices cited, which have been added to this edition, a statistical study of the ultimate prognosis in a more limited group of cases as well. That this record represents the final achievement of neurosurgery the author would be the first to deny. But it does represent a definite goal which all neurosurgeons will seek to achieve and if possible surpass. The book will prove useful not only to surgeons of the brain but to all members of the profession confronted with the puzzling problems of tumors of the brain. This edition is well printed; the illustrations, apparently prepared from Mr. Thomas's original plates, are well reproduced.

Sickness and Insurance: A Study of the Sickness Problem and Health Insurance. By Harry Alvin Mills, Professor of Economics, The University of Chicago. Cloth. Price, \$2. Pp. 166. Chicago, Illinois: University of Chicago Press, 1937.

In general, this discussion of health insurance is more impartial and gives greater consideration to the attitude of the medical profession than the majority of the writings by the advocates of health insurance. There is one important qualification of this judgment. The reports of the Committee on the Costs of Medical Care are accepted unreservedly, with the specific statement that "there has been general acceptance and little but praise of the fact-finding done." On the contrary, it is just the technic used in the "fact-finding" and the accuracy of the alleged facts concerning the basic features of amount and distribution of illness and medical care that have been most sharply challenged. The quotation from the Committee on the Costs of Medical Care (page 152) that "thousands of persons are sick and dying in this country because the knowledge and facilities that we have are inadequately applied" is a good example of the misleading statements of the committee. No effort is made by either the committee or the author to show that fewer persons "are sick and dying" in any country where insurance has been applied. The program offered by the author,

however, is much less sweeping and impracticable than is usually proposed. "It includes (1) an extended and improved public health service; (2) an amended Social Security Act so as to provide cash benefits for wage-earners when disabled by sickness as well as when unemployed because of lack of work; (3) appropriate tax-supported medical care for special groups; and (4) organized medical care of persons in the lower-income groups when involved in high-cost illness, with the costs met by compulsory insurance contributions and tax revenues."

Third Symposium on Silicosis. An Official Transcript of the Third Silicosis Symposium Held in Connection with the Trudeau School of Tuberculosis at Saranac Lake, N. Y., June 21 to 25, 1937. Edited by B. E. Kuecble, Vice President and Claims Manager, Employers Mutual Liability Insurance Co., Wausau, Wis. Paper. Price, \$3. Pp. 266, with illustrations. Wausau, Wis., 1937.

This is the official transcript of the third symposium on silicosis, held in connection with the Trudeau School of Tuberculosis at Saranac Lake, N. Y., June 21 to 25, 1937. The symposium consisted of thirteen lectures, which in their entirety deal with all aspects of silicosis, from etiology to the administrative problems involved. Following each paper is a discussion in which the author frequently expresses an opinion not noted in the paper. For example, Dr. Sayers was asked whether disability from silicosis could be measured physiologically before x-ray diagnosis had been made, to which he replied in the negative. The final diagnosis depends on the degree of disability, on the x-ray appearance and on other physical observations. The progressive tendency of the disease after removal from dust exposure was brought to the attention of all by Dr. Sayers, who referred to the works of Bohme and Russell. In this country most workers dealing with the silicosis problem accept the opinion that uncomplicated silicosis is not an incapacitating disease but is the menace that it is because it specifically predisposes to tuberculosis. The pathology, pathologic physiology, roentgenology, clinical picture and control methods from medical, engineering and legal aspects are ably presented and discussed. The book represents much of the latest and best thought on silicosis. Worthy of favorable comment is the fact that this transcript is indexed. The first two transcripts (1933 and 1935) were not indexed.

The Compleat Pediatrician: Practical, Diagnostic, Therapeutic and Preventive Pediatrics for the Use of Medical Students, Internes, General Practitioners, and Pediatricians. By Wilburt C. Davison, M.A., D.Sc., M.D., Professor of Pediatrics, Duke University School of Medicine, Durham, N. C. (Adaptation of the Title Page of *The Compleat Angler* by Izaak Walton, 1653.) Second edition. Cloth. Price, \$3.75. Pp. 276. Durham, N. C.: Duke University Press, 1938.

The second edition of this cross index pediatricus has profited by the experimental presentation of the first. The first edition suffered in usefulness to the student and the general practitioner because its inclusive material was offered in a too brief and staccato manner. The present form of presentation really gives a portrait of the subjects discussed. The style consists of a running description, and the eye is not so much distracted by the large cross reference numbers. The page is divided into two columns, further adding to readability. Conforming to the original, this edition numbers the subjects but not the pages. The number of sections has been reduced by combining the material in groups. For instance, the 329 pediatric diseases have been gathered into 133 groups, the 164 signs and symptoms into ten paragraphs and the 213 laboratory tests and therapeutic technics into thirty-three divisions. New sections on growth, development, nutrition and infant mortality have been added. The entire subject matter has been divided into thirteen instead of the original seven chapters, conforming more closely to the conventional textbook. At the same time an enormous amount of detailed information has been compressed into the 250 sections, replacing the original 1,957. As in the first edition, the last numbered section does not indicate the number of sections in the book. For instance, the chapter on laboratory procedures ends with section 207, while the next chapter begins with 213. In fact, the curious but consistent omission of six between the numbers of sections ending one chapter and beginning the next puckers the brow and kindles an interrogative flash of the eye. Why? By this omission there are really 178 sections in the

book by reason of twelve hexajumps instead of the printed 250. The mathematical nature of this review so far merely reflects the mathematical framework on which this volume pins its text. This statement is at once an explanation and an apology, because it is impossible to do justice to the mass of specific and authoritative information compressed between the flexible covers of this book. Frequent editions assembling and assaying the mass of pediatric literature accomplished so successfully and effectively should be welcomed because no doctor can do justice to himself in the field of pediatrics without this notebook-library of pediatrics. Although the composition of the encyclopedia is still unique, the reader will be gratified to find this quality somewhat sacrificed for greater clarity and availability. Before it was a short cut for the professor. Now even a student will find it useful. Abstaining from the excesses of originality in which he indulged his first edition, the author has sobered his performance temperately.

Les embolies artérielles des membres. Par H. Halmorici. Préface de M.M. R. Leriche et J. Fiolle. Paper. Price, 55 francs. Pp. 336, with 25 illustrations. Paris: Masson & Cie, 1937.

This monograph should be translated into English. It is such a splendid piece of work, complete in every detail—with one possible exception—that it ought to be available to every one. Starting out with a brief preface by Leriche and his colleague Fiolle, wherein they make the point that this is the first analytic research devoted to arterial embolism of the limbs—to which the author devoted two years—the book first gives a short historical review, followed by a study in etiology; three fourths of the cases followed cardiac disease. Next comes a chapter devoted to symptomatology, following which there is an extensive clinical study wherein many illustrative cases are cited. In the chapter on diagnosis the author calls attention to the fact, which others have noted, that arterial spasm may, under certain circumstances, simulate an embolism. In the section devoted to pathology, numerous satisfactory photomicrographs are found. The most interesting section, devoted to treatment, is divided into two parts, the first being nonsurgical, in which various drugs such as acetylcholine are used, and the second being surgical, with chief emphasis on surgery. Embolectomy, arteriectomy, sympathectomy, anastomosis and ligations and, finally, amputation are considered in the order named. The time element is most important in considering an embolectomy. If more than from ten to twelve hours has elapsed from the time the embolus has occurred, operation is contraindicated. In certain later cases arteriectomy may be helpful. The only real criticism to be made is that Dr. Halmorici fails even to mention the passive vascular exercise method of treatment. This is unfortunate, because it may well be that passive vascular exercise will eventually supplant all other methods of treating embolic accidents to peripheral arteries. There is an extensive bibliography.

Report on the Assistance of Indigent Patients Suffering with Epilepsy. The Minnie Frances Kiehn Memorial Fund. The Department of Nervous and Mental Diseases, Northwestern University Medical School, Chicago, Illinois. Cloth. Pp. 567, with 9 illustrations. Ann Arbor, Mich.; Edwards Brothers, Inc., 1936.

This work is planned to indicate work done and the opportunity for great discoveries if more funds are granted. The book opens with facsimiles of letters indicating that the chairman of the department presents to a medical "liaison officer" a report on the "assistance of indigent patients suffering with epilepsy." The liaison officer then writes that he has the honor to transmit the report to the dean of the medical school, and finally the dean forwards the report to the bank from which the funds came, including a request that the description of patients be kept strictly confidential. Later in the volume are sixty-five pages of clinical descriptions. On page 65 is the statement "Certainly we feel that nowhere else in America is there opportunity for study of epilepsy comparable to this." There are photographs of the medical school and of various bits of apparatus, clinic benches and hospital beds. It is also stated that research in epilepsy such as reported could be done only by a great university and certainly not by an independent hospital or research institute. This study concerned three groups of patients totaling ninety-six individuals. The usual

classification of the epilepsies and etiologic concepts is followed. It is said that tubular vision is common in epileptics, which is surprising. All the body fluids were examined with the usual negative results. Surgical treatment is used when indicated to remove scars. A ketogenic diet, bromides and phenobarbital are successfully prescribed and dehydration is discarded—all in accordance with general experience. Auras are ascribed to excitation of the brain stem in opposition to the usual view that they arise from the cortex, but the evidence is not conclusive. As a scientific treatise the value of this report lies in reiteration of what is already well known.

Los ruidos cardíacos en condiciones normales y patológicas. Por Oscar Orías, doctor en medicina, director del Instituto de fisiología y profesor de fisiología de la Facultad de ciencias médicas de Córdoba (Argentina), y Eduardo Braun-Menéndez, doctor en medicina, jefe de investigaciones del Instituto de fisiología y adscripto a la Cátedra de fisiología de la Facultad de ciencias médicas de Buenos Aires. Paper. Pp. 279, with 127 illustrations. Buenos Aires: El Ateneo, 1937.

For several decades following Laënnec's invention of the stethoscope there was a rich output of literature concerning the sounds of the heart. Experimental, clinical and postmortem observations were drawn on to explain the mechanism and meaning of normal and pathologic sounds. Since the advent of the x-rays and the electrocardiograph the subject has been presented from a new point of view. Graphic studies of the heart sounds by direct phonocardiographic methods and especially with electrical amplification have come to the front. This volume is the result of experimental and clinical study along these lines. Technic is described. The mechanism and graphic registration of normal sounds are well considered. In the last part more than a hundred pages is devoted to sounds in pathologic states—valvular lesions, gallop rhythm and various disturbances of rhythm. Many excellent illustrations, most of them original, help to explain the text. There is a good bibliography. The work is appropriately dedicated to Houssay and Wiggers. Whether the tendency to employ electrophonocardiography in everyday practice will develop until its use is widespread can only be determined by time. This book will be found a useful help by those interested in the subject.

X-Rays and Radium in the Treatment of Diseases of the Skin. By George M. MacKee, M.D., Professor of Clinical Dermatology, New York Post-Graduate Medical School and Hospital, Columbia University. Third edition. Cloth. Price, \$10. Pp. 830, with 310 illustrations. Philadelphia: Lea & Febiger, 1938.

This edition, almost entirely rewritten, amounts to a brand new, authoritative guide in the treatment of diseases of the skin with x-rays and radium. It embodies virtually all present knowledge of this subject and the book should be a "bible" for all dermatologists and for all other physicians, as well as technicians, who undertake the treatment of the various dermatoses with these agents. In order to reflect all aspects of the subject authoritatively, a noteworthy list of collaborators have written or brought down to date certain chapters of the book. These include new chapters on physics, biology, apparatus and instruments by Edith Quimby, a careful revision of the medicolegal chapter by Harold Bouton, an excellent and complete revision of the chapters on psoriasis, lichen planus and the hemopoietic diseases by Dr. Fred Wise, the action of roentgen rays and radium on animal organs and tissues by Dr. Arthur U. Desjardins, an excellent new chapter on histopathology by Dr. Hamilton Montgomery of the Mayo Clinic, a revision of the chapters on x-ray technic by Dr. Anthony Cipollaro, a complete revision of the chapter on fungous diseases by Dr. George M. Lewis, revision of the chapter on the pyoderms and other work by Dr. Henry D. Niles, and a thorough revision of the chapter dealing with miscellaneous disorders by Dr. Franklin Grauer. All obsolete material has been eliminated from this edition and it can be safely stated that it is practically impossible to offer any adverse criticism in the compilation of this excellent volume. Each chapter has a bibliography appended, from which the investigative student can readily obtain all the pertinent literature on any desired branch of the subject. The text is clearly and concisely written throughout, and the style is uniform in spite of the rather large number of contributors. Credit is given where credit is due throughout the text. As stated.

this book has no competition and is now even much better in every respect than its previous editions; in fact, it is so far superior to its previous editions that no dermatologist, at least, can afford to be without it.

Recent Advances in Pathology. By Geoffrey Hadfield, M.D., F.R.C.P., Professor of Pathology in the University of London, and Lawrence P. Garrod, M.A., M.D., B.Ch., Professor of Bacteriology in the University of London. Third edition. Cloth. Price, \$5. Pp. 420, with 65 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1938.

The title of this book might well be changed to "Recent Advances in the Scientific Phases of the Practice of Medicine." Seventeen chapters cover in terse and easily understood language the newly acquired information on resistance to infection, the reticulo-endothelial system, cancer research and therapy, deficiency diseases, cardiovascular and renal diseases, the respiratory tract, the digestive system and liver, the central nervous system and the ductless glands. Every student of medicine, young or old, should be acquainted with the facts which are here so admirably condensed and clarified. Even recent graduates from medical schools may profit by such a review, and for older practitioners and those specializing in the laboratory divisions of medicine the book is a real *vade mecum*. As is inevitable in such a work, certain important omissions might be mentioned, particularly Goldblatt's work on experimental hypertension, recent developments concerning so-called vitamin K, the modern classification of the gliomas, and others which readers in various laboratories will conclude deserve more notice than has been given. However, it is doubtful whether any similar review in any phase of medical science will be found to be as complete as this one. The illustrations are carefully selected and splendidly reproduced. They are so valuable an adjunct to the text that readers would welcome more of them, particularly if colors could be used. A useful bibliography is given at the end of each chapter.

Poulsen's Text-Book of Pharmacology and Therapeutics. Second English edition thoroughly revised by Stanley Alstead, M.D., M.R.C.P., Physician to Out-Patients at the Western Infirmary of Glasgow. Cloth. Price, 25s. Pp. 537, with 29 illustrations. London: William Heinemann, Ltd., 1938.

Poulsen from 1895 to 1928 was a distinguished professor of pharmacology at Oslo. The eleventh edition of his text-book (in German) was published in 1937. It has been a popular textbook in Scandinavian and German universities for many years. The second revised English edition is based on the recent British and United States pharmacopoeias. The plan followed is typical of "the continental atmosphere" and follows rather closely after Schmiedeberg's *Grundriss der Pharmakologie*. The book is perhaps too brief on the theoretic side and too limited in the discussion of recent developments. Ethylene, propylene and cyclopropane occupy but half a page, while curarine receives two pages. Acetylcholine is not mentioned, nor the adrenergic or cholinergic theories of nerve impulse. In the discussion of digitalis the chemistry is omitted and the term aglucone is not mentioned, and no mention of standardization is made. A mistake is made in the translation of β -imino azolyethylamine by calling it histidine instead of histamine, which might indicate that the translator did not desire to add to or emphasize the chemical side of the subject. In the discussion of acids, no mention is made of hydrogen ion concentration or acidosis. The discussion of ferments and foodstuffs is brief and hormones are not mentioned. The book as a whole is reliable and conservative but not so modern or inspiring as present conditions demand.

In the Name of Common Sense: Worry and Its Control. By Matthew N. Chappell, Ph.D. Cloth. Price, \$1.75. Pp. 192. New York: Macmillan Company, 1938.

The author began his professional career in engineering; later he became a Ph.D. in psychology and, because of his own neurosis, became interested in emotions. At present he is director of a private "group psychological research." According to the author, worry is a luxury and increases with practice and decreases with lack of practice. Exercises are presented to enable patients to shift from unpleasant to pleasant thoughts, thus breaking the habit of worry. Emotion can be

willed away. This book has been written for the lay person by a lay person whose only degree in academic psychology does not deter him from assuming the role of physician to the mentally ill. His lack of understanding of human psychologic problems and naïveté in his confidence seem colossal. Yet his therapeutic exercises carried out with neurotic groups may in short periods of time give help to a large group of patients unable to afford the time or expense of rational therapy, for his methods are those of reassurance and "covering up," particularly adapted in group therapy. Such a confident leader can sometimes exert a strong temporarily beneficial effect on neurotic groups.

Die Fasern des Nervus vagoaccessorius beim Menschen und bei Säugtieren. Von Doz. Dr. Julius Botár, Georg Popják und Dr. Alexander Bense. *Acta litterarum ac scientiarum Reg. Universitatis Hung. Francisco-Iosephinae, Sectio medicorum*, Tome VIII, Fasc. 2. Redigunt: J. Baló, D. Miskolczy et St. Ruzsnyák. Paper. Price, 6.60 marks. Pp. 97-229, with 108 illustrations. Budapest: Eggenbergersche Buchhandlung Karl Rényi; Leipzig: Johann Ambrosius Barth, 1937.

This monograph is concerned with the anatomy, both gross and microscopic, of those nerve fibers which arise from the nervus accessorius and join with the vagus and which these authors have termed the nervus vagoaccessorius. The description of the structure of these nerves in the cat has been written by Bense, in the dog by Popják and in the monkey, chimpanzee and man by Botár. They conclude that the structure of these nerves as to the roots of origin, the main trunk and its branches does not differ materially in man and the various animals investigated.

On a New Gland in Man and Several Mammals (Glandula Parathyroidea). By Ivar Sandström. [Uppsala Läkareförenings Förhandlingar, 1879-80, 15, 441-471.] Translated by Carl M. Sempel, Dr. Med. Dent. Edited by Charlotte H. Peters and J. F. Fulton. With biographical notes by Professor J. August Hammar. Boards. Price, \$1. Pp. 44, with 4 illustrations. Baltimore: Johns Hopkins Press, 1938.

Here is a careful translation of Sandström's pioneering work on the parathyroid, made by a fellow countryman who is now a graduate student in medicine. The article itself is of interest to all endocrinologists, histologists and anatomists. It is a classic contribution, for the first time completely translated from the Swedish. Combined with it is a biographic note by Prof. August Hammar, which includes a letter from Sandström to his sister describing the reception of presentation of this discovery at a scientific meeting and pertinent references to earlier work on the parathyroid. The book has been carefully edited by two persons thoroughly appreciative of medical history.

Las arritmias en clínica (diagnóstico, pronóstico y tratamiento). Por el Doctor Antonio Battro. Paper. Pp. 476, with 201 illustrations. Buenos Aires: El Ateneo, 1937.

This volume is much more than a reprint of the first edition of the author's work on the arrhythmias, published in 1933. There has been a thorough revision of the chapters on the theories of the irregularities, and the clinical features have been much expanded. The work is well gotten up, with numerous illustrations, especially of electrocardiograms that are of help in making clearer the meaning of the text. Diagnosis and treatment are given due prominence. Those who found the volume of 1933 of service will find this one still more helpful.

Nutrition of the Infant and Child. By Julian D. Boyd, B.S., M.S., M.D., Associate Professor of Pediatrics, State University of Iowa, Iowa City. National Medical Monographs. Edited by Morris Fishbein, M.D. Cloth. Price, \$3. Pp. 198, with 40 illustrations. New York: National Medical Book Co., Inc., 1937.

This monograph is an excellent summary of nutrition in pediatrics. The author writes as a physician who has not been swamped by the flood of foolishness poured out in commercial claims for various foods and vitamins. The critical and analytic spirit permeates this little volume chapter by chapter. The contents are divided into sections on the principles of nutrition, foods for the normal infant and child, and nutrition during illness. The text is well illustrated by reproductions of photographs. In a comparatively few pages at the end, practical diet lists and schedules are provided for a range from normal infant feeding to specific diabetic diets. The last section alone is

worth a place in any man's library for quick reference. In general, this little volume on nutrition in pediatrics is recommended to medical students and general practitioners. If properly interpreted by the glib group of the gossip school of food faddists, it constitutes a subtle rebuke.

Synopsis of Genitourinary Diseases. By Austin I. Dodson, M.D., F.A.C.S., Professor of Genitourinary Surgery, Medical College of Virginia, Richmond, Virginia. Second edition. Cloth. Price, \$3. Pp. 294, with 112 illustrations. St. Louis: C. V. Mosby Company, 1937.

This is an excellent compact presentation of practical phases of genito-urinary problems which should appeal to the student or busy practitioner. Current advances in the fields of calculi, malignant conditions, neurogenic disturbances and functional disturbances of the male sexual system bring the subject matter down to the present.

Miscellany

HEARING BY BONE CONDUCTION

GEORGE E. COLEMAN, B.S.
SAN FRANCISCO

People who are hard of hearing frequently complain that rapid strides are being made in the prevention and cure of many other diseases but "nothing is ever done for us." Deafness of whatever type presents one of the most baffling problems confronting medical science. Much has been accomplished in the past in the way of laying the foundations for accurate knowledge concerning the organ of hearing and the changes that occur in disease. Since the American Otological Society organized a research bureau and other smaller "funds" have provided grants to various universities, the pessimism is beginning to be dissipated. Otologists, anatomists, physiologists, neurologists, pathologists, psychologists, physicists and acoustical engineers have initiated well integrated programs either alone or in collaboration with one another and even between departments of different universities. Otologic research is now making stupendous progress, especially in the United States and Canada. During the International Congress of Otolaryngologists held at Prague the remark was frequently made that since American investigators are making such advances Europe will have to look to its laurels. The advent of the electrical hearing aid has proved a boon to those who are able and willing to use one. Many as yet refuse this boon and continue their complaints against science. This period will pass; in the years to come more millions will accept this aid. First came reception by air conduction, then by bone conduction. Each has brought in its train new medical and physical problems which are now receiving intensive investigation. I refer chiefly to the standardization of audiometers, to possible injury due to excessive amplification of air borne sounds, and to possibilities of reeducation, by the judicious use of a proper instrument, either of a not too degenerated or damaged end organ in the cochlear duct or of receptors for hearing in the brain. The time is not yet here, however, when salesmen of hearing aids should permit themselves to discuss these matters pseudoscientifically with prospective clients.

The phenomenon of hearing by bone conduction has been known for many centuries. Recently a wide interest in the subject and its more technical problems has become awakened. The attention given to bone conduction during the meeting of the American Otological Society in Detroit in May 1936 did much to stimulate interest.

Especially new are some painstaking studies which occupied three years, made by Norman Watson¹ in the laboratory of

Professor Knudsen in the University of California. After a comprehensive survey of previous investigations and the types of vibrators used in them, a special induction type electrodynamic vibrator of wide frequency range and large output, linear in response and as free as possible from stray sound radiation, was designed and built. This was combined with a suitable driving system and calibrations were then obtained on both by apparatus specially designed for the purpose. Then a few of the problems of hearing by bone conduction were studied.

One of the problems to which Watson has given consideration concerns cranial resonance and a study of the vibrating skull. The cranium has been found to vibrate somewhat like an elastic spherical shell at 1,000 cycles but to deviate from such vibrations in certain particulars. The relative magnitudes of vibration at different portions of the skull have been determined. While injury to the inner ear from cranial resonance at high intensities seems possible, Watson believes that such injury is not apt to be caused by the less intense vibrations produced by commercial hearing aid bone conduction units.

A method of determining bone conduction thresholds has been developed which is capable of high accuracy. In the case of one observer, at a single frequency, a series of measurements has been obtained with an average error of a single observation of only 1.1 decibels. This is decidedly encouraging. I have had frequent hearing tests over a period of years by different observers using the same audiometer and by the same observer using different instruments and there have been wide fluctuations in the results, beyond the probability of corresponding changes in hearing threshold. An eminent European otologist who recently visited this country stated that, until audiometers are more carefully standardized, more accurate determination of hearing threshold could be obtained with tuning forks. Watson has studied the threshold at various positions on the skull and teeth under varying conditions and has determined that bone conduction hearing is most acute when the mouth is closed, the teeth are clenched and the ear canals are occluded. The lowering of the threshold on occlusion of the ear canals has been found to be a real phenomenon at frequencies as high as 10,000 cycles.

The effect of certain factors, such as the total force of the vibrator button on the skin and the size of the button, have been determined and correlations made between the positions of maximal vibration on the skull and positions of the vibrator to give the greatest acuity. For the present at least the amplitude of vibration of the vibrator button, placed on the center of the forehead, has been found to be the most satisfactory unit of measurement of bone conduction thresholds, although the actual acuity at this position is 10.5 decibels lower than when the vibrator is placed on the upper teeth.

Other problems studied by Watson are the tentative determinations of the limits of audition of pure tones by bone conduction (open ear canals), both as to usable intensity range and as to the total frequency range. A method for testing the hearing of speech by bone conduction has been developed which is based on that of Fletcher and Steinberg for air conduction testing. Application of this method to Watson's own hearing (slightly above average) indicated that for all levels above threshold up to 85 decibels the articulation was the same whether he listened by air conduction (one ear or two) or bone conduction (open or occluded ear canals). This points to the conclusion that the hearing of speech by bone conduction may attain as high a degree of perfection as that attained by the more usual method of air conduction.

With these and the continuing studies on selective amplification in the laboratory of Dr. Knudsen and active research elsewhere, the hard of hearing as a group may well take further encouragement.

¹From the Hooper Foundation, University of California.
J. Watson, N. A.: Hearing of Speech by Bone Conduction, *J. Acoustical Soc. America* 9: 99 (Oct.) 1937; Limit of Audition for Bone Conduction, *ibid.* 9: 294 (April) 1938.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospitals: Right to Determine What Physicians May Perform Surgery on Premises.—The Marlboro County General Hospital was established and maintained from funds solicited from the public at large. The trustees of the hospital, who were selected by the contributors, procured a charter from the state and adopted rules for the regulation and control of the hospital. The appellant, a licensed physician, alleging that those rules deprived him of the privilege of practicing surgery in the hospital, sought by legal action to have the hospital declared a public hospital and to require the trustees to revoke the rules which excluded him from practicing in it. The trial court dismissed the action, and the physician appealed to the Supreme Court of South Carolina.

It is conceded, said the court, that if the Marlboro County General Hospital is a private institution the action instituted by the appellant must fail. The court held that the hospital, although a public charity, was a private corporation, and quoted from *Dartmouth College v. Woodward*, 4 Wheat. 518, 671, 4 L. Ed. 629, as follows:

When, then, the argument assumes, that because the *charity* is public, the *corporation* is public, it manifestly confounds the popular, with the strictly legal, sense of the terms. . . . When the corporation is said, at the bar, to be public, it is not merely meant, that the whole community may be the proper objects of the bounty, but that the government have the sole right, as trustees of the public interests, to regulate, control and direct the corporation, and its funds and its franchises, at its own will and pleasure. Now, such an authority does not exist in the government, except where the corporation, is in the strictest sense, public; that is, where its whole interests and franchises are the exclusive property and domain of the government itself.

The action of the trial court in dismissing the physician's complaint was accordingly affirmed.—*Strauss v. Marlboro County General Hospital* (S. C.), 194 S. E. 65.

Optometry: Corporate Practice of Optometry Illegal; Injunction to Restrain Practice.—The defendants, a firm of opticians, sold eyeglasses on prescriptions by registered physicians and optometrists. Most of the prescriptions filled by the defendants were issued by a physician employed by them in their place of business at a weekly salary. The price charged was the same whether the customer brought his own prescription or obtained one from the physician employed by the defendants. The price was retained in whole by the defendants. The plaintiff, a registered optometrist, "for his own benefit, for the benefit of other optometrists, and for the benefit of the public," brought suit to restrain the defendants from practicing optometry without being registered under the optometry practice act of Massachusetts. The case was reported, without decision, to the Supreme Judicial Court of Massachusetts on an agreed statement of facts.

The optometry practice act of Massachusetts provides that in order to practice optometry a person must possess certain educational qualifications, pass an examination and be registered. Physicians and surgeons lawfully entitled to practice medicine in the state are exempted from the provisions of the act. The defendants contended that they were not practicing optometry illegally because their servant, who was a physician, was entitled to practice optometry without registration.

There is, said the Supreme Judicial Court, a generally recognized rule that a licensed practitioner of a profession may not lawfully practice his profession as a servant of an unlicensed person or a corporation and, if he does so, the unlicensed person or corporation employing him is guilty of practicing that profession without a license. A corporation cannot possess the personal qualities required of a practitioner of a profession. Its servants, though professionally trained and duly licensed to practice, owe their primary allegiance and obedience to their employer rather than to the clients or patients of their employer. This rule recognizes the necessity of immediate and unbroken

relationship between a professional man and those who engage his services. It has been applied to lawyers, physicians and dentists. While recognizing a conflict of authority, the court was of the opinion that the greater weight of authority held that optometry constitutes a profession rather than a trade. Abnormalities of the eye sometimes indicate and often result in serious impairment of the general health. The learning and the ethical standards required for optometry and the trust and confidence reposed in optometrists by those who employ them cannot be dismissed as negligible or as not transcending the requirements of an ordinary trade. In this connection the court pointed out that section 72 of the optometry practice act of Massachusetts declares that "No optometric practise or business . . . shall be conducted under any name other than that of the optometrist or optometrists actually conducting such practise or business." The court interpreted this provision to prohibit, as a general rule, the practice of optometry by a layman or a corporation through servants who are registered optometrists. An exception to the general rule in the statute, which provides that the statute shall not "prevent the employment by any person of a registered optometrist to be in charge of, or practice optometry in, an optical department conducted by such person," was not applicable to the case in question. The servant employed by the defendants did not come within that exception because he was not a registered optometrist but a physician. The court therefore concluded that the defendants were practicing optometry without right.

Accordingly, a decree was granted restraining the defendants from practicing optometry, either personally or by any servant or employee, until they should become lawfully entitled to do so.—*McMurdo v. Getter* (Mass.), 10 N. E. (2d) 139.

Workmen's Compensation Acts: Hemorrhage into Eye in Relation to Strain and Tuberculosis.—In the course of his employment the claimant drew off seed beans from a hopper into sacks and then piled the sacks, each weighing from 112 to 150 pounds, on a truck, the top sack being placed at a height of from 3½ to 4 feet. On Dec. 27, 1935, after he had stooped to lift one of the sacks he noticed that objects appeared red when he looked at the light and it seemed as if there were red streaks "of stuff" through his left eye. When he did not look at the light "it looked like a bunch of moss wove around through" the eye. Three days later he consulted an eye specialist, who found "an extensive recent hemorrhage on the interior of his left eye," with approximately 80 per cent impairment of vision of that eye. His right eye was practically normal. The claimant continued at work and on January 9 his physician found a hemorrhage in the right eye also. Shortly thereafter roentgenograms disclosed an old healed tuberculosis in his lungs. The impairment of vision grew progressively worse and eventually the claimant became permanently and totally blind in both eyes.

In the course of the proceedings instituted by the claimant under the workmen's compensation act of Wyoming there was medical testimony to show that the walls of the blood vessels in his eyes had been weakened by the old tuberculosis; that strain, lifting, walking hard, jarring the body or even excitement would produce such hemorrhages as he sustained; that the strain of lifting the sacks in the course of his employment would be such as would cause the hemorrhages; that a person suffering from weakened blood vessels in the eye as a consequence of an old healed tuberculosis might safely go through life without any impairment of vision if he was careful in all physical movements, and that a person of the claimant's age, if the blood vessels in his eyes were normal, would not be affected by hard labor or the strain of lifting sacks such as those he lifted. All the physicians who testified at the trial agreed that a person would notice a hemorrhage into the eyeball within a few seconds after it occurred, as when such a hemorrhage takes place "the light of any light appears red." There was no definite evidence, however, regarding the time when the claimant first noticed hemorrhages in his right eye. The trial court found that the strain in lifting the sacks caused the bursting of the blood vessels of his eyes and that he had sustained a compensable accident under the Wyoming workmen's compensation act. He

was awarded compensation for permanent and total blindness in both eyes and the employer appealed to the Supreme Court of Wyoming.

The employer contended that there was not sufficient evidence on which to base the finding that the claimant suffered an accidental injury on Dec. 27, 1935, as a result of his employment, because his blindness was caused by disease not ensuing from any injury suffered in his employment and he was doing only his usual work when the difficulty occurred. The Supreme Court, however, concluded that the claimant had suffered a compensable accidental injury and that, so far as the right to compensation was concerned, the fact that the blood vessels in the claimant's eyes were abnormally weak, whether congenitally or from disease, made no difference. Compensation, said the Supreme Court, under the Wyoming compensation act does not rest on the condition of health of the employee or on his freedom from liability to injury through a constitutional weakness or latent tendency. The Supreme Court concluded, however, that the trial court erred in making the award when it took into account the condition of the claimant's right eye, since there was no testimony to indicate when the hemorrhage in it occurred. The burden was on the claimant to show that he suffered a compensable injury in the right eye before an award could be legally made for such an injury.

The Supreme Court accordingly affirmed the judgment of the trial court so far as it awarded compensation for loss of vision in the left eye and reversed it so far as it undertook to make an award for the loss of vision in the right eye. The court directed a new trial of the issues as to the injury to the right eye.—*In re Scroggum: Associated Seed Growers, Inc., v. Scroggum (Wyo.)*, 73 P. (2d) 300.

Medical Practice Acts: Issuance of License Without Examination Discretionary with Licensing Board.—Section 924 of the Delaware code, a section of the Delaware medical practice act, requires the medical council to license an applicant who has passed an examination given by the appropriate board of medical examiners. It provides that the medical council may, on the recommendation of the board of medical examiners, without further examination, license an applicant who has been examined and approved by the National Board of Medical Examiners and has complied with certain other conditions not here material. A certificant of the National Board of Medical Examiners instituted mandamus proceedings against the medical council to compel it to license her, without examination, to practice medicine. She contended that it was the duty of the medical council to license an individual who had been examined and approved by the National Board of Medical Examiners, claiming that the word "may," italicized above, meant "must" or "shall" and was not used in a permissive sense. The superior court of Delaware, New Castle, however, concluded that the legislature intended to give the medical examining boards and the medical council discretionary powers with respect to applicants who have not passed the usual examinations. The petition for a writ of mandamus was therefore dismissed.—*State ex rel. Foulger v. Layton (Del.)*, 194 A. 886.

Workmen's Compensation Acts: Sarcoma of the Sternum Attributed to Trauma.—The deceased, a janitor, in the course of his employment in the spring of 1935, stumbled. His chest struck a box he was carrying and the box defaced a desk top, but although he reported the incident to his superior he did not mention the fact he had hurt himself. That night, however, he told his wife of the occurrence and complained that "his chest was hurting him awful bad," but he continued to work. About three weeks later his wife noticed a red spot on his chest about the size of a dollar. He then consulted a physician, who described the injury as "a hard protuberance, tumor like." Shortly thereafter the deceased informed his employer of his injury. For about fourteen months longer the workman continued at work. The protuberance continued to grow. In March 1936 roentgenograms showed a growth on the chest and bone destruction of the breastbone and cartilages of the ribs. Apparently a diagnosis of sarcoma of the sternum was made at that time. On June 6, 1936, the growth, which had developed to the "size of a baby's head," was removed by

surgery. Thereafter the workman was confined to bed until his death in September 1936. Compensation was awarded to his widow under the Kansas workmen's compensation act, and the employer and his insurance carrier appealed eventually to the Supreme Court of Kansas.

His widow testified as to what the deceased told her when he returned home from work on the night when the accident was alleged to have occurred. The attending physician testified that the fall and injury, in his opinion, caused the condition that eventually developed into a sarcoma of the breastbone. The physician who had taken the roentgenograms of the deceased's chest in March 1936 testified that the tumor could have come from the injury in the spring of 1935. The physician who removed the growth from the deceased's breastbone testified that the tumor resulted from the injury. Nevertheless the employer and insurance carrier, appellants, contended that there was no competent evidence that an accident in the course of the deceased's employment caused his death and called an expert witness who testified that "sarcoma malignancies" are not traceable to trauma in more than 2 per cent of the cases or even less; but he added:

The important thing is the establishment of the fact of a trauma, and finding within this tissue or that immediately adjacent to the . . . periosteum and the structure of the bone or immediately adjacent to the point of the alleged injury, evidence of the injury. If in such a tissue anywhere from four weeks to a year or even more a malignancy develops, I believe it would be considered due to trauma.

The Supreme Court of Kansas held that the evidence was sufficient to prove the occurrence of the accident and its causal relation to the death.

The appellant assigned error in the admission of the testimony of the widow as to what the deceased had told her the night he was hurt. The admissibility of evidence before the compensation commission, said the Supreme Court, is to be governed not by the venerable rules of evidence but under the liberal rules applicable to hearings before that commission. The courts may not nullify the commissioner's work by applying their own standards to it; if the commissioner's decision is based on substantial and satisfactory evidence, relevant, reasonable and persuasive, though not technically admissible under the rules of evidence governing procedure, the decision will be upheld. The true rule as to the admissibility of the evidence before the compensation commission, the court thought, was as follows: Where a workman dies of his injuries, the statements he made to third persons touching the accident which caused his injuries may be received and accorded probative force, if such statements are inherently reasonable and not intentionally made for the purpose of being used as evidence to base a claim for compensation, and where the other evidence and attendant circumstances corroborate the statements so convincingly as to establish the fact of the workman's accident and injury with moral certainty. Tested by this rule, said the Supreme Court, the testimony of the widow was properly received.

The award of compensation in favor of the widow was accordingly affirmed.—*Parker v. Farmers Union Mut. Ins. Co. (Kan.)*, 73 P. (2d) 1032.

Society Proceedings

COMING MEETINGS

- National Medical Association, Hampton, Va., Aug. 15-19. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
- Oregon State Medical Society, Timberline Lodge, Aug. 24-27. Dr. Morris L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
- Society of American Bacteriologists, San Francisco, Aug. 30-Sept. 1. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.
- Utah State Medical Association, Ogden, Sept. 1-3. Dr. D. G. Edwards, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Washington State Medical Association, Bellingham, Aug. 29-31. Dr. V. W. Spiekard, 1303 Fourth Ave., Seattle, Secretary.
- West Virginia State Medical Association, White Sulphur Springs, July 11-13. Mr. Joe W. Savage, Public Library Building, Charleston, Executive Secretary.
- Wyoming State Medical Society, Laramie, Aug. 7-9. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

15: 515-642 (May) 1938

*Comparison of Percussion and Radiography in Locating the Heart and Superior Mediastinal Vessels. D. Mainland and C. B. Stewart, Halifax, N. S., Canada.—p. 515.

*Injection Plus Dissection Study of Coronary Artery Occlusions and Anastomoses. M. J. Schlesinger, Boston.—p. 528.

Role of Nutritional Deficiencies in Production of Cardiovascular Disturbances in the Alcohol Addict. R. Goodhart and N. Jolliffe, New York.—p. 569.

Study of Myocardial Hypertrophy of Uncertain Etiology, Associated with Congestive Heart Failure, with Consideration of Role of Antecedent Hypertension. B. I. Kaplan, E. Clark and C. E. de la Chapelle, New York.—p. 582.

Abnormal Distribution of Superficial Muscle Bundles in the Human Heart. Jane Sands Robb and R. C. Robb, Syracuse, N. Y.—p. 597.

Effect of Digitalis on Form of Human Electrocardiogram, with Special Reference to Changes Occurring in the Chest Lead. H. J. Stewart and R. F. Watson, New York.—p. 604.

Percussion and Radiography.—Mainland and Stewart studied by percussion the deep dulness of the heart and the superior mediastinal vessels of 110 male university students when erect and when recumbent. Wire markers were then fastened to the chest and telerradiographic films were taken. All results were analyzed statistically. In these students the mean errors (difference between percussion and x-ray borders) were less than 1 cm. in most intercostal spaces; but much greater allowance for possible error had to be made in percussion of any one subject; for example, there was a range of more than 3.5 cm. in the fourth left intercostal space in students in the erect position. The differences in error between the erect and the recumbent position could be largely attributed to dispersion of x-rays. For practical purposes the variation between two percussions on the same student was as great as between different students, because the correlation between the errors in repeated percussions of the same students, although significant, was low. From one third to one half of the variation in the cardiac (but not the superior mediastinal) region was attributable to diaphragmatic movement, it being impossible to secure the same midphase of respiration on any two occasions. The risk of wide error in any individual percussion could be greatly lessened by taking the average of several independent readings, thereby reducing the effect of diaphragmatic movement. Stature, weight and size or shape of the chest had no important relation to the percussion error. Ten students, taken at random, sufficed to show the difference in error of two experienced physicians. Each observer should know his own percussion error.

Coronary Artery Occlusions and Anastomoses.—To ascertain accurately the site and effects of all occlusions and anastomoses of the coronary artery in individual hearts Schlesinger found that it was necessary to devise a method capable of completely and simultaneously visualizing the entire course of all arterial branches so that they could be studied in detail. This has been accomplished by a simple standardized method utilizing (1) a newly devised multicolored radiopaque injection mass, (2) a new method of cutting open the injected heart and (3) a complete dissection of the colored coronary artery tree. The new injection mass consists of a suspension of lead phosphate in agar, colored differently for the right and left coronaries. It is injected at 150 mm. of mercury pressure, at 45 C.; it sets quickly and permits immediate cutting and roentgenography of the fresh unfixed heart. The new method of opening the heart unrolls all the coronary arteries so that they lie in one plane and avoids overlapping of the roentgenographic shad-

ows of the injection mass within them. The distribution of the multicolored mass in the branches of the dissected coronary artery gives an absolute index of the distribution of the blood from either orifice of the coronary artery.

American Journal of Diseases of Children, Chicago

55: 897-1140 (May) 1938

*Rheumatic Erythema Nodosum. A. Wallgren, Göteborg, Sweden.—p. 897.

Metabolism and Mode of Action of Vitamin D: III. Importance of Liver for Its Antirachitic Efficacy. W. Heymann, Cleveland.—p. 913.

*Results of Collapse Therapy in Children with Pulmonary Tuberculosis. M. Siegel, New York, and Bella Singer, Elizabeth, N. J.—p. 924.

Pathogenesis and Treatment of Myotonia Congenita: Further Observations. H. G. Poncher and Helen Woodward Wade, Chicago.—p. 945.

Insensible Loss of Weight in Infancy: Findings for Forty-Six Infants Under Basal Conditions. J. L. Law, with assistance of W. G. Frederick, Ann Arbor, Mich.—p. 966.

Diagnosis of Syphilis in Newborn Infants: Use of Quantitative Wassermann Tests. A. U. Christie, Baltimore.—p. 979.

Mentality of Infants Relieved of Hydrocephalus by Coagulation of Choroid Plexuses. T. J. Putnam, Boston.—p. 990.

Pathology of Chronic Arthritis of Children (Still's Disease). R. B. Portis, Chicago.—p. 1000.

The Undescended Testicle. N. Nixon, Los Angeles.—p. 1037.

Rheumatic Erythema Nodosum.—Wallgren points out that investigators have been disinclined to give up the idea that in certain cases there may exist a connection between erythema nodosum and rheumatic fever, even though in general erythema nodosum rests on a tuberculous basis. A rheumatic etiology is quite compatible with the present conception of its pathogenesis. Rheumatic erythema nodosum should, in the first place, be sought among those who react negatively to tuberculin. In certain cases existing tuberculous infection need not be the cause of erythema. For instance erythema nodosum following an attack of tonsillitis in a tuberculous child may be due to the tonsillitis and may have no connection with the tuberculous infection. In such a case, however, strong reasons should be adduced in support of the assumption that the tuberculosis is not the producer of the erythema, and the first condition is to prove that the tuberculous infection is inactive and obviously older than the erythema. Tuberculous erythema usually occurs when the tuberculous infection manifests itself. The only cases in which a genesis other than tuberculosis can be proved are those in which the reaction to tuberculin remains negative during other acute infections. Hence it follows that one may consider rheumatic fever as the cause of erythema nodosum only on condition that the child is not infected with tuberculosis. For the correct interpretation of the pathogenesis of the erythema a child should always be examined for tuberculosis when he has acute rheumatism during which erythema nodosum appears.

Collapse Therapy in Tuberculosis.—Siegel and Singer present the results obtained by artificial pneumothorax and by other means of collapse therapy employed between 1928 and 1936 for 105 children from 5 to 15 years of age with open pulmonary tuberculosis. The sputum of all these children contained tubercle bacilli, and a cavity was visible in the roentgenogram in 95 per cent of the cases. The predominant clinical types seemed to have begun either as isolated infiltrative tuberculosis, usually in the infraclavicular region with a tendency to cavitation and bronchogenic dissemination, or as bilateral disseminated tuberculosis, apparently the sequela of a benign hematogenous seeding, with a tendency to the formation of nodular-cirrhotic productive lesions with or without small cavities. In addition, there were far advanced bilateral forms, usually with bilateral cavities. Forty children improved, thirty-three remained unimproved and thirty-two died. Conversion to negative sputum was obtained by means of pneumothorax alone in twenty-one of twenty-eight children within three months and in all twenty-eight children within six months after the start of collapse therapy. Moderate or large amounts of pleural effusion developed in the course of pneumothorax in twenty-eight cases. Tubercle bacilli alone were found in nine cases, pyogenic organisms and tubercle bacilli in four cases and pneumococci in one case. The fluid was resorbed in only two of the thirteen cases in which either tuberculous or mixed infections were present. After collapse therapy, 60 per cent of the patients with isolated infiltrative tuberculosis (unilateral) improved, of those with infiltrative tuberculosis (with contra-

lateral spread) 22 per cent improved and 29 per cent of those with disseminated tuberculosis improved. With a small amount of collapse (less than 50 per cent) 15 per cent of the patients improved, with a moderate amount (from 50 to 75 per cent) 30 per cent improved and with a large amount (over 75 per cent) 50 per cent improved. The best results were obtained among the children with unilateral isolated infiltrative tuberculosis in whom a large amount of collapse could be obtained. Regression of the contralateral process was seen in only 12 per cent of the cases in which bilateral lesions were treated on one side only, while progression occurred in 53 per cent of these cases. Unilateral collapse therapy is inadequate in such cases and collapse on both sides is required. By means of bilateral collapse therapy the number of improved children increased. Internal pneumolysis, in patients with broad, extensive adhesions, was rarely successful and was attended with considerable danger. Several children improved after thoracoplasty. Most of the deaths among the treated children occurred within the first two years after the initiation of therapy, after which relatively few children died. Most of the deaths were due to the progression of the disease on the contralateral side or because the process was too far advanced at the start of therapy. Of eighty-seven untreated children with open lesions admitted to the hospital between 1929 and 1936 and observed to date 95.4 per cent died, 1.1 per cent are unimproved and 3.4 per cent are improved.

American Journal of Hygiene, Baltimore

27: 493-742 (May) 1938. Partial Index

- Mosquito Studies on the Ilha de Marajó, Pará, Brazil. H. W. Kumm and O. Novis.—p. 498.
- Immunity in Monkeys that Have Remained Symptomless Following Injection with Poliomyelitis Virus. J. F. Kessel and F. D. Stimpert, Los Angeles.—p. 516.
- Immunologic Comparison of a Los Angeles Strain of Poliomyelitis Virus with the M. V. Strain. J. F. Kessel, F. D. Stimpert and R. T. Fisk, Los Angeles.—p. 519.
- Sex Differences in Trends of Tuberculosis Mortality. C. C. Dauer, Washington, D. C.—p. 538.
- Malaria and Anopheline Survey of Grenada, British West Indies. F. M. Root and J. Andrews, Baltimore.—p. 549.
- Pathogenicity of Strain of Small Race Endamoeba Histolytica. W. W. Frye and H. E. Meleney, Nashville, Tenn.—p. 580.
- *Analysis of 520 Cases of Pellagra Reported in California from 1928 to 1935. C. E. Smith and Ida May Stevens, San Francisco.—p. 590.
- Limitations to Control of Helminth Parasites in Egypt by Means of Treatment and Sanitation. J. A. Scott and C. H. Barlow, Cairo, Egypt.—p. 619.
- Relative Frequency of Ring-Stage Plasmodia in Reticulocytes and Mature Erythrocytes in Man and Monkey. R. Hegner, Baltimore.—p. 690.
- Frequency of Rheumatic Manifestations Among the Siblings, Parents, Uncles, Aunts and Grandparents of Rheumatic and Control Patients. Frances E. M. Read, A. Ciocco and Helen B. Taussig, Baltimore.—p. 719.

Pellagra in California.—A questionnaire form has been sent by the California State Department of Public Health to each physician in the state reporting a case of pellagra since 1928. Of 627 cases reported as pellagra from 1928 to 1935 Smith and Stevens chose 520 for analysis. The criterion for inclusion was the presence of a dermatitis compatible with this diagnosis. Pellagra reported in California has been of the severe type, as is shown by the high incidence of diarrhea, oral lesions, dementia or other manifestations of the nervous system. Dementia and other symptoms of the nervous system occurred most frequently in the alcoholic patients. Only one tenth of the cases were recurrent, and recurrences were approximately three times greater in dietary than in alcoholic pellagra. Morbidity rates increased progressively from youth to old age with a mean age of 49.79 ± 0.43 years. One half of the cases occurred in the 40 to 59 age group. There were twice as many male as female pellagrins in the alcoholic group but in the other classifications there were more females than males. Pellagrins of native white stock born in California were mainly addicted to alcohol, while those born in other states were for the most part in the dietary deficiency and antecedent illness groups. One half of the cases developed during the four months February through May. The disease was predominantly urban, and the cheap rooming house sections of the cities contributed the majority of the cases. The approximate mortality was 66 per cent; patients more than 50 years of age had the highest. Of the 146 pellagrins with dementia, diarrhea and oral lesions 92 per cent died.

American Journal of Medical Sciences, Philadelphia

195: 577-716 (May) 1938

- Problems Relating to Invasive Properties of Hemolytic Streptococci and Their Control by Sulfanilamide. W. T. Longcope, Baltimore.—p. 577.
- *Studies in Diabetes Mellitus: VI. Mortality and Longevity of Diabetics. E. P. Joslin, Boston; L. I. Dublin and H. H. Marks, New York.—p. 596.
- Creatine Tolerance Test in Differential Diagnosis of Graves' Disease and Allied Conditions. A. R. Sohval, F. H. King and Miriam Reiner, New York.—p. 608.
- Coexistence of Myxedema and Pellagra in the Same Patient: Report of Two Cases. J. A. Greene, Iowa City.—p. 618.
- *Spectrographic Determination of Lead in Blood from Normal Human Subjects. G. H. Scott and J. H. McMillen, St. Louis.—p. 622.
- *Etiologic Importance of Fatigue and Prognostic Significance of Monocytosis in Neutropenia (Agranulocytosis). P. Reznikoff, New York.—p. 627.
- Optic Atrophy in Pernicious Anemia. R. H. Kampmeier and E. Jones, Nashville, Tenn.—p. 633.
- The Course of Hypertensive Heart Disease; in Relation to Gross Arteriosclerosis. N. Flaxman, Chicago.—p. 638.
- *Specific Dermatoses Due to Vitamin A Deficiency. J. B. Youmans and M. B. Corlette, Nashville, Tenn.—p. 644.
- Periarthritis Nodosa: Report of Case Diagnosed Clinically and Confirmed by Necropsy. B. P. Sandler, New York.—p. 651.
- Relationship of Sydenham's Chorea to Other Rheumatic Manifestations. Lucy Porter Sutton and Katharine G. Dodge, New York.—p. 656.
- Blood Cultures After Tonsillectomy. H. Southworth, New York, and C. G. Flake, Boston.—p. 667.
- Oxygen Want and Intracranial Pressure: Preliminary Report. J. Michelsen and J. W. Thompson, Boston.—p. 673.
- Control of Gastric Acidity in Peptic Ulcer by Alkalized Powdered Skimmed Milk Tablets. P. H. Wosika, Chicago.—p. 676.
- Subcutaneous Emphysema Complicating Bronchial Asthma: Report of Case and Analysis of Seventeen Previously Reported Cases. L. Rosenberg and J. Rosenberg, Brooklyn.—p. 682.

Mortality and Longevity in Diabetes Mellitus.—Joslin and his associates constructed life tables based on diabetic patients treated at the Baker Clinic from 1897 to 1928 and traced to 1929. The tabulations have been made in the same manner as those in insurance work. There has been a continuous decline in the death rate of diabetic patients. The death rate at all ages in the latter part of the period surveyed, 1926 to 1929, was 75 per cent below that of the first part, 1897 to 1913. The gains have been greatest in young diabetic patients. The decline in mortality was most rapid after insulin came into use. Large increases in the expectation of life have occurred. At the age of 10, the increase between 1897-1913 and 1926-1929 is estimated at about thirty years. The increase is progressively less with advancing age. The death rate in diabetes is still much in excess of that for the general population.

Lead in Blood of Normal Human Subjects.—Scott and McMillen examined spectrographically samples of blood of eighty-nine normal first year medical students for traces of lead. Forty-four blood samples failed to show traces of lead in quantities of 0.001 mg. or more per hundred cubic centimeters. The other forty-five samples of blood contained from 0.001 to 0.009 mg. of lead per hundred cubic centimeters of whole blood.

Fatigue and Monocytosis in Neutropenia.—In order to determine the relative importance of etiologic factors Reznikoff studied the thirteen cases of neutropenia admitted to the hospital during the last five years. Fatigue previous to the onset of illness was found to be a prominent predisposing factor in eleven of the thirteen cases. No inquiry was made as to this fact in two cases. Drugs were known to be of etiologic significance in nine cases and in the other four no evidence of drug administration could be elicited. Menstruation was a factor in the case of three of the nine female patients; six women had passed the menopause. Infection was of possible etiologic importance in six cases; in four no history of infections could be elicited and in three no previous infection was found. Analysis emphasizes the importance of fatigue as a precursor to neutropenia when this factor is considered. A perusal of the literature indicates many cases of agranulocytosis in which fatigue, worry and sleeplessness were sufficiently marked to call the attention of the physician to this factor. Of the thirteen patients, nine recovered, and all had sustained relative, and in most cases absolute, monocytosis. In many of the cases an increase of leukocytes preceded the return of neutrophils, the rise in leukocyte count, the drop in temperature or the symptomatic improvement. Two of the four patients who died showed a progressive decrease in monocytes and one was reported to have had an

increase from 0 to 20 per cent just before death. The fourth patient presented an atypical picture. The clinical diagnosis at necropsy was aplasia of the bone marrow or acute leukemia and chronic neutropenia. Two days before death a count of 30 per cent monocytes was reported. The patients who recovered had monocyte peaks ranging from 17 to 66 per cent and in all cases the monocytosis was sustained for several days. To be significant monocytosis must occur early in recovery and persist.

Dermatoses Due to Vitamin A Deficiency.—During the last two years Youmans and Corlette observed a number of patients with an eruption which they believe is due to vitamin A deficiency. Twenty cases have been studied in detail. So far as the authors are aware, their cases are the first instances in white persons to be reported in this country. In most of these this deficiency was due simply to an inadequate diet. In a few cases the deficiency was conditioned by disease leading to a decreased intake, an improper absorption or an increased demand for the vitamin. The horny or gooseflesh type of eruption, the similarity of the lesions, grossly and histologically, to those described by Frazier and their response to treatment with vitamin A identify these conditions as a specific dermatosis due to vitamin A deficiency. Grossly, the individual lesions resemble in many, but not all, respects the acne papule, with the important exception as noted by Loewenthal and by Frazier and Hu, that pustulation is uncommon. The eruption has occurred in adults well past the acne age, without a history of or scars of preexisting acne, and the affected areas (arms, legs and back) are those less commonly involved by acne. Histologically, the lesions have differed from the other type only in a slightly greater cellular reaction. The eruption has disappeared following the administration of vitamin A. Although the changes in the eye and in vision have been thought to be the earliest reliable clinical manifestations of vitamin A deficiency, the authors' observations as well as those of Frazier and Hu suggest that in some instances the cutaneous eruption may be the first clinical evidence of the deficiency. These changes are easily recognizable. The time required for the eruption to disappear under the influence of treatment with vitamin A is of practical importance. Improvement is seldom noted in less than four weeks, and in many instances from twelve to fourteen weeks is required before the eruption has disappeared. The prolonged response of the eruption to treatment is a factor which must be taken into consideration when the response to treatment is considered in the diagnosis.

American Journal of Ophthalmology, St. Louis

21: 487-604 (May) 1938

- Cysts of the Margin of the Eyelid. A. Hagedoorn, Amsterdam, Netherlands.—p. 487.
Role of Transfusion in Ophthalmology. W. G. Frey, New York.—p. 491.
Genesis of Cystic Membrane. H. D. Lamb, St. Louis.—p. 503.
Divergence Insufficiency: Clinical Study. A. deH. Prangen and F. L. P. Koch, Rochester, Minn.—p. 510.
X-Ray Studies of Nasolacrimal Duct. E. W. Spackman, Philadelphia.—p. 518.
Treatment of Detachment of Retina by Use of Thermophore. H. M. Langdon, Philadelphia.—p. 525.
Studies on Infectivity of Trachoma: VIII. Biology of Infectious Agent. L. A. Julianelle and R. W. Harrison, St. Louis.—p. 529.
Tenon's Capsule Transplants in Surgery of Ocular Muscles, with Especial Reference to Postoperative Deviations with Adhesions Between Muscles and the Eyeball. C. Berens, New York.—p. 536.

American Journal of Orthopsychiatry, Menasha, Wis.

8: 185-408 (April) 1938

- Orthopsychiatry: Fifteenth Year. G. J. Mohr, Chicago.—p. 185.
Mechanism and Psychoanalytic Theory. J. Goldstein, New Haven, Conn.—p. 192.
Social Maturity and Stability of Nondelinquents, Protodelinquents and Delinquents. F. Brown, Minneapolis.—p. 214.
Analytic Character of Rorschach Ink Blot Test. J. Vaughn and Othilda Krug, Cincinnati.—p. 220.
Case Studies in Reading Disability. R. A. Young, Boston.—p. 230.
Follow-Up Study of Woodworth-House Mental Hygiene Inventory. P. L. Harriman, Lewisburg, Pa.—p. 255.
Problems of Short Time Psychotherapy. R. A. Fuerst, Chicago.—p. 260.
Constructive and Destructive Tendencies in Children: Experimental Study: Further Report. N. W. Ackerman, New York, with technical assistance of Virginia Rehkopf.—p. 265.
Attitudes, Emotional and Physical Symptoms Commonly Associated with Menstruation in 100 Women. A. Louise Brush, Greenwich, Conn.—p. 286.
Study in Cause and Prevention of Functional Mental Disease. F. W. Dersheimer, New York.—p. 302.

American Journal of Physiology, Baltimore

122: 275-546 (May) 1938. Partial Index

- Urea Clearance of Cats with Diabetes Insipidus. L. E. Farr, K. Hare and R. A. Phillips, New York.—p. 288.
Comparison of Tissue Metabolism in Normal, Spayed, Spayed-Thyroidectomized and Hypophysectomized Female Rats. J. Viator and Dorothy H. Andersen, New York.—p. 296.
Comparative Study of Gross and Microscopic Effects of Follicle Stimulating Hormone and Anterior Pituitary Sex Hormone on Rat Testis. H. S. Rubinstein and H. M. Radman, Baltimore.—p. 319.
Prevention of Adrenalin Lung Edema by Alarm Reaction. H. Selye, Montreal, Canada.—p. 347.
Effect of Thyroidectomy on Pancreatic Diabetes in Cat. F. C. Dohan and F. D. W. Lukens, Philadelphia.—p. 367.
Endogenous Nitrogen and Basal Energy Metabolism Relationships in Hypophysectomized Rats. U. S. Ashworth and G. R. Cowgill, New Haven, Conn.—p. 373.
Reduction of Experimental Polycythemia by Liver Administration. J. E. Davis.—p. 397.
Dietary Management of Albino Rats Before and After Thyroparathyroidectomy. Mary C. Patras, E. A. Galapeaux and R. D. Templeton, Chicago.—p. 409.
Life Cycle of Red Blood Cell in Dog. W. B. Hawkins and G. H. Whipple, New York.—p. 418.
Metabolism and Body Temperature of Normal and Adrenalectomized Rats During Exposure to Cold. G. C. Ring, Boston.—p. 435.
Relation of Adrenal Cortex to Carbohydrate Metabolism. A. Grollman, Baltimore.—p. 460.
*Blood Pressure Studies on Infants. R. A. Woodbury, M. Robinow and W. F. Hamilton, Augusta, Ga.—p. 472.
*Changes with Age in Blood Pressures in Adult Men. W. H. Lewis Jr., New York.—p. 491.
Seasonal Variations in Normal Polymorphonuclear Count in Man. J. MacLeod.—p. 520.
Excitability of Hypothalamus After Degeneration of Corticofugal Connections from Frontal Lobes. H. W. Magoun, Chicago.—p. 530.

Blood Pressure of Infants.—Woodbury and his colleagues carried out the present study in order to measure accurately the blood pressure at birth, to establish a reliable method for clinical use in measuring the blood pressure of the newborn, to study the effect of certain drugs and to record the pressure changes that occur under various physiologic and pathologic conditions. Thirty-seven babies were observed: twenty-four were apparently normal, the mothers of eight of the infants had toxemias of pregnancy and five infants were prematurely born. The blood pressures, with the use of the hypodermic manometer, of the twenty-four full term babies averaged 80/46 mm. of mercury. The standard deviation of a single observation was 8.1 mm. (systolic) and 8.2 mm. of mercury (diastolic). The infant's blood pressure was not significantly affected by obstetric anesthesia, by the onset of respiration, by the clamping of the cord after birth or by the administration of carbon dioxide and oxygen to the baby. The infant's blood pressure was affected slightly but significantly by the blood pressure level of the (normal) mother, by toxemia of pregnancy in the mother, by amyl nitrite administered to the baby and by 0.2 mg. of epinephrine administered intravenously. It was markedly affected by crying, by dehydration without collapse, by administration of fluid to the dehydrated baby and by the degree of prematurity.

Age and Blood Pressure.—Lewis determined the blood pressure of 100 men, twenty in each decade from 40 to 89 years of age. There was also a man of 91 and one aged 101. The measurements were made with a mercury manometer by the auscultatory method. The subjects were in a basal state—at rest in bed, in the morning, having fasted fourteen hours. The systolic pressure rose continually after the age of 40, but the greatest rise was observed after the age of 65. At the age of from 40 to 44, the average pressure was 116 mm.; at the age of from 60 to 64 it was 124 mm. At the age of from 85 to 89 it was 158 mm. For the two men over 90 the pressure was actually lower. The scatter of individual measurements was greater in the older groups than in the younger. The deviation from the mean in the various age groups was somewhat greater in the elderly. The largest standard deviation was 26.5 mm. in the men aged from 85 to 89 years, the smallest 8.4 mm. in those aged from 45 to 49. The level of the median of the systolic pressure increased gradually with age. The level of the mean of the systolic pressure rises with increasing age. The general trend of the systolic pressure is a rise and is directly related to age. But the mean values, if taken by five or ten year periods, present not a straight line relation but a curvilinear one. There is first a gradual rise from 40 to 64 years and then a rapid rise from 65 to 89 years. After 89 years there

is apparently a fall. The average diastolic pressure varied slightly in succeeding decades. The mean value in the five year groups ranged from 75 mm. of mercury (at from 65 to 69 and 70 to 74 years) to 85 mm. (from 80 to 84 years); in the ten year groups it varied between 75 and 80 mm. The extent of scatter was approximately the same at all ages; it was smallest in the period from 40 to 49 years. The standard deviation, ranged from 6.4 mm. (8.2 per cent) to 12.8 mm. (15.5 per cent). The standard deviation was smaller at ages 45 to 54 years than in other groups. The relation to age follows an uninflected horizontal line. The average mean pressure in succeeding five and ten year classes presented an increase with age. The rise was similar to that of the systolic pressure but modified by the constancy of the diastolic pressure. The average mean pressure in those aged from 40 to 44 years was 96 mm. A slight rise occurred up to 55 years, a more marked rise after 75 years. As with the systolic and the mean pressures, the relation of the pulse pressure to age is represented more accurately by a curvilinear regression with significant inflections beginning at the sixtieth year.

Archives of Neurology and Psychiatry, Chicago

39: 885-1126 (May) 1938

- Electroencephalography: IV. Localization of Seizure Waves in Epilepsy. H. H. Jasper, Providence, R. I., and W. A. Hawke, Toronto, Canada.—p. 885.
- Differential Features of "Cerebellar" and "Vestibular" Phenomena in Macacus Rhesus: Preliminary Report Based on Experiments on 300 Monkeys. A. Ferraro and S. E. Barrera, New York.—p. 902.
- Sensory Discrimination in Monkey, Chimpanzee and Man After Lesions of Parietal Lobe. T. C. Ruch, J. F. Fulton and W. J. German, New Haven, Conn.—p. 919.
- Dystonia Musculorum Deformans: Clinicopathologic Study. C. Davison and S. P. Goodhart, New York.—p. 939.
- Acid-Base Balance of Blood in a Patient with Hysterical Hyperventilation. J. H. Talbot, S. Cobb, F. S. Coombs, M. E. Cohen and W. V. Consolazio, Boston.—p. 973.
- *The Ayala Index. N. Savitsky and M. M. Kessler, New York.—p. 988.
- New Series of Anticonvulsant Drugs Tested by Experiments on Animals. H. H. Merritt and T. J. Putnam, with technical assistance of Dorothy M. Schwab, Boston.—p. 1003.
- Astereognosis Associated with Tumors in Region of Foramen Magnum. J. E. Rubinstein, New York.—p. 1016.
- The Laurence-Biedl Syndrome Occurring in a Brother and Sister. T. K. Rathmell, Norristown, Pa., and M. A. Burns, Philadelphia.—p. 1033.
- Somatotopic Localization in Extrapyramidal System. S. P. Goodhart and B. H. Balser, New York.—p. 1043.
- Pathogenesis of Encephalitis Occurring with Vaccination, Variola and Measles. K. H. Finley, Boston.—p. 1047.
- Role of Vitamin C in Metabolism of Nerve Tissue. H. Wortis, S. B. Wortis and Frances I. Marsh, New York.—p. 1055.

The Ayala Index.—Savitsky and Kessler analyzed the clinical value of the Ayala index, on the basis of 186 readings in 181 cases in which cerebrospinal fluid hypertension measured at least 140 mm. of water. The Ayala index is usually computed as the product of the final intracranial pressure and the amount of spinal fluid removed divided by the initial pressure. Like any other method of investigation, the index is merely an aid and cannot be considered as a conclusive diagnostic procedure. It must be evaluated in the light of all the other signs. Indexes of between 1 and 5 favor the diagnosis of an expanding lesion, such as tumor or abscess. Indexes of between 5 and 6 are equivocal and cannot help in deciding between hydrocephalus and an expanding lesion. When the index is above 6.5 one is probably not dealing with an expanding lesion. The quantity of spinal fluid removed should be constant—the authors suggest 10 cc. Expanding lesions tend to produce low indexes and all other groups high indexes. The index has been found to be of greatest value in the diagnosis of abscess of the brain, especially in its differentiation from otitic hydrocephalus. The Ayala index has been helpful in diagnosis in more than 90 per cent of the cases. The results in the series have been constant. The Ayala index is of no value in the diagnosis of tumor after operation. The indexes in the postoperative series were almost all high; when preoperative indexes were available they were always relatively low. From a few cases of subdural hematoma it was learned that when the Ayala index is over 7, or even over 6.5, the likelihood of a subdural hematoma is less. In 87 per cent of forty-one cases of hypertensive vascular disease, the Ayala index was above 5.5. The index is of especial value in such cases, for occasionally an expanding lesion coexists with hypertensive vascular disease. When the Ayala index is low,

especially below 5, it is probable that a tumor of the brain with hypertensive vascular disease exists. A high Ayala index is found in cases of uncomplicated arterial hypertension associated with increased spinal fluid pressure.

Archives of Physical Therapy, Chicago

19: 257-320 (May) 1938

- Intermittent Venous Occlusion in Peripheral Vascular Disease: Study of Its Physiologic Mechanism and Therapeutic Effects. W. S. Collins, N. D. Wilensky and H. Ginsberg, Brooklyn.—p. 261.
- Effect of Arteriovenous Shunt in Peripheral Vascular Disease. X. Harpuder, I. D. Stein and J. Byer, New York.—p. 272.
- Homemade Whirlpool Bath Suitable for Arms and Legs. B. L. Boynton, Madison, Wis.—p. 279.
- Thermal Effects of Short Wave Diathermy on Bone and Muscle. S. L. Osborne and J. S. Coulter, Chicago.—p. 281.
- Electrolytic Action Between Metals in Bone Surgery. C. S. Venable, San Antonio, Texas.—p. 285.
- Hyperpyrexia of Lymphopathia Venerea. E. B. Tauber and J. P. Squires, Cincinnati.—p. 289.
- Röntgen Therapy in Acute Mastoiditis. R. Schillinger, Brooklyn.—p. 295.

Archives of Surgery, Chicago

36: 723-898 (May) 1938

- Intra-Abdominal Apoplexy. C. B. Morton, University, Va.—p. 723.
- *Acute Retrocecal Appendicitis Based on 751 Instances. D. C. Collins, Los Angeles.—p. 729.
- Fresh Fracture of the Os Calcis. C. W. Goff, Hartford, Conn.—p. 744.
- Collection of Air in the Right Subdiaphragmatic Space, with Special Reference to Hepatodiaphragmatic Interposition of the Colon. S. G. Schenck, Brooklyn.—p. 766.
- *Mechanics of Simple Intestinal Obstruction: Experimental Study. L. Sperling, Minneapolis.—p. 778.
- *Intestinal Obstruction: Experimental Evidence on Loss of Blood in Intestinal Strangulation. H. G. Scott, Minneapolis.—p. 816.
- Osteogenic Sarcoma: Report of Two Unusual Cases. G. A. Carls, New York.—p. 838.
- Dugas on Curability of Inflammation. Cecilia C. Mettler, Augusta, Ga.—p. 845.
- Partial Cholecystectomy. W. L. Estes Jr., Bethlehem, Pa.—p. 849.
- Fractures of Both Bones of the Leg: Management by Use of Double Steel Pin Traction in Plaster of Paris. G. J. Curry and E. S. Taylor, Flint, Mich.—p. 858.
- Suppurative Intrathoracic Thyroiditis: Report of Case. J. D. Kirbybaum and A. H. Rosenblum, Chicago.—p. 867.
- Polycystic Fibrous Dysplasia. L. Lichtenstein, New York.—p. 874.

Acute Retrocecal Appendicitis.—During the last ten years, Collins has encountered 751 instances (25 per cent) of acute retrocecal appendicitis among 3,003 consecutive appendectomies. Four hundred and seventy-one of the patients were men. The average age of the 751 persons was 29.7 years. Three hundred and one mentioned previous frequent occurrence of infections of the upper part of the respiratory tract, and in 111 of these such infections had preceded their present acute abdominal complaints by an average interval of 8.4 days. Four hundred and sixty-six persons had had previous similar attacks of abdominal pain of varying degrees of severity. Three hundred and eight patients had been previously treated for cholecystitis, gastric or duodenal disease or for disease of either the right kidney or the right ureter. Fifty-two persons had been operated on for various types of peptic ulcer, without alleviation of their symptoms. Of the 280 women in the series, forty-four had received medical treatment for pelvic inflammatory disease without obtaining noticeable relief. At the time of the appendectomy, thirty-three showed no evidence of pelvic inflammatory disease. Two nephropexies had been performed without relieving the patients. Forty-five women had been subjected to various gynecologic procedures, without experiencing permanent relief. An additional thirty-one had had various major pelvic operations, of which, for various reasons, their appendixes had not been removed. Nausea, headache, flatulence, heartburn, regurgitation, insomnia, constipation and lack of appetite, of which many of these patients complained, disappeared in 73.4 per cent of the cases after appendectomies. In twelve persons more than 55 years of age, certain long-continued arthritic pains disappeared after the removal of the appendix. One hundred and thirty-seven patients complained of mild pains in the epigastric or the right hypochondriac region, which failed to localize at McBurney's (McArthur's) point; 214 complained of steady, dull, deeply situated pains in the right lumbar region of the back; eighty-eight experienced pains in the right shoulder and in 107 instances severe pains in the upper part of the abdomen continued for an average of 6.4 hours. Only 12

persons presented the fairly classic signs and symptoms of acute appendicitis and only two of this subgroup died of generalized peritonitis. The average oral temperature on admission was 100.4 F. Palpation presented a diffuse, mild, generalized tenderness in the right side of the abdomen located lateral and cephalad to McArthur's point. Hyperesthesia of the skin was rarely seen in the right lower quadrant of the abdomen. Muscular rigidity was absent in 397 instances. Rebound tenderness was absent in 243 cases. The sign most frequently obtained was the production of intense pain by exerting steady, deep pressure on the right flank lateral to the right psoas major muscle. Rectal examination in 218 instances gave the only positive signs of the existence of acute appendicitis. Correct preoperative diagnoses of acute appendicitis were made in only 554 cases, and only 304 were diagnosed as of the retrocecal variety. In seventy-seven patients walled-off retrocecal abscesses were palpated through exploratory midright rectus incisions. These were then closed without disturbing the abscesses and secondary muscle-splitting incisions were made directly over the abscesses and proper drainage was instituted. In the remaining 474 cases, in which either a midright rectus incision or a midline incision was employed, the appendix was removed usually through a lengthened incision with considerable difficulty. The average stay in the hospital for patients with an incision of this type was twenty-five days, as compared to sixteen days for those with a muscle-splitting incision. Localized abscesses were drained by the use of simple Penrose drains of soft rubber dam material. There were ninety-seven examples of secondarily formed pelvic abscesses that required drainage. Twelve of these patients died; ten deaths were attributable to nonmuscle-splitting incisions. Eleven instances of subdiaphragmatic abscesses were encountered and four of these patients died. There were eight patients with multiple abscesses of the liver, all of whom died. Of sixty-nine persons with postoperative pneumonia, nine died. Among the 113 instances of generalized peritonitis, there were twenty-five deaths. Only twelve of the fifty-eight deaths occurred in the cases in which muscle-splitting incisions were performed. Twenty-nine of the patients who died had taken one or more doses of laxative prior to hospitalization.

Intestinal Obstruction.—Sperling confines his study to increased intraenteric pressure as it occurs in simple ileal obstruction and the effects of such pressure on the structure, the function and the permeability of the intestinal wall. A detailed study is presented of the influence of simple mechanical ileus on the length, the weight, the water content, the blood content and the strength of the intestinal wall. Distention, with its increased intraenteric pressure, has a pernicious effect on the function of the intestine. It produces an alteration in normal physiology which is sufficient to explain many of the changes in cases of intestinal obstruction. With the onset of intestinal obstruction there is stasis of fluid and gas within the intestine. The stasis produces a slight increase of intraenteric pressure and a moderate degree of distention which stimulate the normal intestine to increased peristalsis. Distention and increased intraenteric pressure result in an augmented secretion of intestinal juices, which adds to the content of the intestine. Absorption is decreased early in the course of the obstruction. There is thus a progressive increase of distention and of intraenteric pressure. With a rise in intraenteric pressure there is eventually manifested interference with the circulation of blood to the wall of the intestine. Venous stasis ensues and causes infiltration of the intestinal layers with leukocytes. Eventually hemorrhagic infarction, necrosis and even perforation of the intestine may take place. If the intraenteric pressure is maintained over a sufficiently long time, the viability of the intestinal wall becomes impaired and its permeation by toxic material may take place through the gangrenous patches. Death is then due to peritonitis or to absorption of toxic material by way of the peritoneum.

Loss of Blood in Intestinal Strangulation.—From the results of 240 experimental strangulation obstructions Scott concludes that: 1. There is little or no evidence for the direct absorption of "toxic products" from strangulated loops of intestine. 2. There is little evidence for the transperitoneal absorption of "toxic products," except late in the course of strangulation obstruction, when the intestinal wall is no longer viable. 3.

Whole blood and plasma are apparently lost from the general circulation in quantities sufficient in themselves to account for the symptoms of shock and death which occur in most cases of strangulation obstruction.

Canadian Public Health Journal, Toronto

29: 153-202 (April) 1938

- The Place of Mental Hygiene in Public Health. B. T. McGhie, Toronto.—p. 153.
Muscle Conservation and Reeducation in Postpoliomyelitis Paralysis. G. A. Ramsay and R. A. Johnston, London, Ont.—p. 158.
Survey of Tuberculosis Patients in the Home, Vancouver, B. C., 1936. W. Morris, Vancouver, B. C.—p. 166.
Vital Statistics in the Public Health Program. D. V. Currey, St. Catharines, Ont.—p. 171.
*Trichinosis in Montreal. J. H. Gervais, Montreal.—p. 176.
Recent Health Legislation in Canada. R. D. Defries, Toronto.—p. 180.

Trichinosis in Montreal.—Gervais states that twice during 1935, in January and in November, the city health department was notified of the occurrence of cases of trichinosis in Montreal. In the first outbreak there were six cases and one death and in the second sixty-eight cases and no deaths. In neither epidemic was the source of the infestation found. The two outbreaks were unrelated. The second outbreak was limited to a group of people of German extraction who used various types of sausages which contained uncooked pork. Since many persons were known to have used the meat products from this establishment, the fact that only sixty-eight suffered from trichinosis indicates that only a small amount of trichina-infected pork had probably been used.

Delaware State Medical Journal, Wilmington

10: 69-120 (May) 1938

- Mature Approach to Child Training. M. A. Tarumianz, Farnhurst.—p. 69.
Studies of Cases of General Paresis in Delaware State Hospital. Persis F. Elfeld, Farnhurst.—p. 73.
Suicide. J. W. Ballard, Farnhurst.—p. 74.
Multiple Influences in the Field of Mental Hygiene: Clinical Studies of Personal and Social Maladjustments, with Emphasis on Multiplicity of Determining Factors. C. Uhler, Farnhurst.—p. 78.
Characteristic Features of Insulin Coma. G. J. Gordon, Farnhurst.—p. 87.
Clinical Study of a Child with Problems. Fredericka F. Freytag, Farnhurst.—p. 91.
Concerning Sedatives. A. L. Crane, Farnhurst.—p. 94.
Homicidal Insane. M. Zimble, Farnhurst.—p. 98.
The Practice of Dentistry in a Mental Hospital. W. H. Norris and W. H. Mason, Farnhurst.—p. 105.

Florida Medical Association Journal, Jacksonville

24: 571-622 (May) 1938

- Preoperative and Postoperative Care in Surgical Treatment of Pulmonary Tuberculosis. K. A. Morris, Jacksonville.—p. 583.
Bone Injuries in General Practice. E. L. Jewett, Orlando.—p. 584.
*Use of Chaulmoogra Oil in Treatment of Chronic Arthritis. D. W. Smith, Miami; T. G. Blocker and H. J. Tumen, Philadelphia.—p. 586.

Chaulmoogra Oil in Chronic Arthritis.—Smith and his associates believe that chaulmoogra oil (90 per cent chaulmoogra oil, 10 per cent olive oil and 0.2 per cent ethyl aminobenzoate) does give definite relief in chronic arthritis. Treatment of sixty-five patients was limited to the use of chaulmoogra oil. Foci of infection were not removed and no diet was prescribed. Treatment with chaulmoogra oil was postponed in the case of patients recently treated by other methods in order that results might be more definitely evaluated. In a few patients chaulmoogra oil was administered orally, either alone or in combination with the intramuscular treatment. The injections were given in the buttock, about 1½ to 2 inches below the crest of the ilium and above the border of the gluteus maximus. In this area a 3 or 4 inch needle is plunged, allowed to touch the ilium and then withdrawn one-fourth inch prior to the injection in order to avoid the subcutaneous tissues. The planned course of treatment consisted of eight intramuscular injections of chaulmoogra oil (5 cc. each) within six weeks; the first four biweekly and the others at weekly intervals. Of fifteen cases of atrophic arthritis, thirteen became symptom free. The two patients who were not rendered symptom free showed evidence of rheumatic heart disease. Eleven patients showed definite subjective improvement after the third injection. Objective joint changes were definite but more gradual. Eighteen of the thirty-three patients with mixed arthritis became symptom free and

fourteen showed moderate to marked improvement. The improvement corresponded roughly to the degree of atrophic or infectious involvement. In the seventeen patients having hypertrophic arthritis the results were entirely unsatisfactory. Eleven failed to improve at all. Five showed slight and one moderate improvement. Of the six patients who improved nearly all had a subsequent recurrence of symptoms. No objective changes were noted in any of the hypertrophic joints following treatment.

Indiana State Medical Assn. Journal, Indianapolis

31: 275-326 (June) 1938

- The Crippled Child. A. F. Knoefel, Terre Haute.—p. 275.
The Palsied Child: A Preventive Program. C. F. Thompson, Indianapolis.—p. 278.
Treatment of Ragweed Pollenosis: Comparison of Oral and Hypodermic Medication. C. B. Bohner, Indianapolis.—p. 279.
Review of Syphilis. A. C. Offutt, J. C. Kennedy, C. W. Morris, H. N. McClelland and J. F. Spahr, Indianapolis.—p. 283.
Sulfanilamide and Its Related Compounds. W. L. Green, Columbus.—p. 294.
Infectious Mononucleosis. L. L. Blum, Terre Haute.—p. 296.
Ultraviolet Light and Certain Diseases of the Skin. S. R. Mercer, Fort Wayne.—p. 300.

Journal of Allergy, St. Louis

9: 321-432 (May) 1938

- *Statistical Evaluation of Leukopenic Index in Allergy. Mary Loveless, R. Dorfman and Lillian Downing, New York.—p. 321.
Leukopenic Index. E. A. Brown, London, England, and G. P. Wadsworth, Boston.—p. 345.
Variations in Leukocyte Count in Relation to Leukopenic Index. J. M. Hill and Eugenia B. Nethery, Dallas, Texas.—p. 371.

Leukopenic Index in Allergy.—Loveless and her associates state that experiments with the leukopenic index test on a group of nonsensitive subjects failed to support the contention that leukocytosis is the normal response to ingestion, since neither the level nor the fluctuation of the total leukocyte count during a seventy-minute postprandial period was significantly changed from the corresponding fasting period. A standard deviation of ± 511 leukocytes (equal to ± 7.3 per cent of 7,000 cells, the approximate average of all the counts) was found in six successive total leukocyte counts obtained on each of nineteen nonsensitive subjects. A fluctuation of 1,318 cells or more up or down from the mean total count would be expected to occur in analogous individuals, therefore, under the conditions of the test only once in a hundred trials by chance alone. About the same small proportion of normal subjects showed this degree of leukopenia after ingestion as did the food-sensitive patients after either compatible or incompatible food was ingested. In short, postprandial leukopenia was not found to be an index to incompatibility in the experiments. The development of asthma, hay fever and urticaria in a small group of ragweed-sensitive patients given ragweed extract subcutaneously was not associated with any significant change or fluctuation in the leukocyte level.

Journal of Immunology, Baltimore

34: 357-428 (May) 1938

- Studies on Haemophilus Influenzae: III. Failure of Complement of Some Animal Species, Notably Guinea Pig, to Activate Bactericidal Function of Serums of Certain Other Species. J. H. Dingle, L. D. Fothergill and Caroline A. Chandler, Boston.—p. 357.
Action of Diphtheric Toxin on Embryonic Chicks: I. Action of Toxin. Florence L. Evans, Carville, La.—p. 393.
Group Specific Agglutinins in Rabbit Serums for Human Cells: III. Cold Agglutinins. K. M. Wheeler, Providence, R. I.—p. 409.

Journal Industrial Hygiene & Toxicology, Baltimore

20: 333-388 (May) 1938

- *Chronic Lung Changes in Electric Arc Welders. N. Enzer and O. A. Sander, Milwaukee.—p. 333.
Isolation of Mineral Dust in Lungs and Sputum. N. Sundius and A. Bygdén, Stockholm, Sweden.—p. 351.
Comparison of Toxicity of Carbon Tetrachloride and Trichlorethylene. H. M. Barrett, D. L. MacLean and J. G. Cunningham, Toronto, Canada.—p. 360.
*Health Hazards in Metal Spraying. H. I. Miller Jr., G. M. Hama, E. C. J. Urban and P. Drinker, Boston.—p. 380.

Lung Changes in Electric Arc Welders.—For the last three years Enzer and Sander have had under observation twenty-six electric welders of low carbon steel with rods of the same composition. In five of these, nodular shadows were seen on the roentgenograms of their chests which simulated a

modified type of silicosis. In five others the trunk shadows were markedly exaggerated, the appearance simulating a pre-nodular fibrosis of the type seen in older foundry welders. The past occupational histories were checked in detail for exposure to silica dust, but the majority had welded in this plant since they began work, an average total of nineteen years. These men were not breathing particulate matter to any appreciable degree other than that in the welding fume itself. Several of the sixteen men in whom there was no x-ray appearance of nodulation had worked as welders in this plant even longer than those who showed definite nodulation. Investigation revealed that each of the five men with nodulation had done more work inside of tanks than had the five showing only exaggerated trunk shadows but that the latter five had welded inside the tanks considerably more than had any of the sixteen men with perfectly clear lungs. Deposition of iron oxide in the lungs was responsible for the x-ray appearance of nodulation. Functional impairment of the lungs with such iron deposits appears to be lacking, both as to the development of clinical symptoms or susceptibility to complicating infections.

Health Hazards in Metal Spraying.—Miller and his colleagues studied the modern metal-spraying process under laboratory conditions which simulated industrial operations. No matter how careful or skilled the operator, it was found that some of the sprayed metal missed its mark and polluted the surrounding air. Lead, zinc, iron, brass, bronze, copper and aluminum wire were sprayed and the curves plotted show the rates at which the suspensions of the metals settled out of still air. The high muzzle velocity of the sprayed metal makes ventilation requirements for exhaust hoods unusually severe. It was found difficult to spray ordinary small objects, even when placed well back in the hood, without spray being blown back into the face of the operator. Freedom from the general pollution of the workshop was easily obtained when the spraying was done in a large booth or room which was well ventilated. Spray-gun operators should wear air-supplied respirators.

Journal of Urology, Baltimore

39: 589-732 (May) 1938

- Renocolic Fistulas: Reports of Three Cases. M. B. Wesson, San Francisco.—p. 589.
Roentgenologic Examination of Kidney, with Special Reference to Backflow and Injuries Associated with Retrograde Pyelography. W. E. Stevens, San Francisco.—p. 598.
Hypertension in Unilateral Renal Disease. W. F. Leadbetter and C. E. Burkland, Baltimore.—p. 611.
*Nephrectomy for Arterial Hypertension: Preliminary Report. C. H. Boyd and L. G. Lewis, Baltimore.—p. 627.
Litholapaxy. G. J. Thompson, Rochester, Minn.—p. 636.
Complete Vesical Paralysis: Report of Case. A. de la Pena, A. Amselem and R. Ruiz-Ocana, Madrid, Spain.—p. 642.
Presacral Neurectomy and Sacral Ganglionectomy in Affections of Bladder. F. L. Pearl and B. Strauss, San Francisco.—p. 645.
Retrograde Catheterization in Diagnosis and Treatment of Seminal Vesiculitis. A. P. Peterson, New York.—p. 662.
Unusual Type of Diverticulum of Urethra. A. de la Pena, Madrid, Spain, and J. A. Hendrick Jr., Rochester, Minn.—p. 678.
Lesions of Urinary Tract Producing Symptoms of Intra-Abdominal Disease. R. Chute and S. B. Kelley, Boston.—p. 683.
Chemotherapy in Infections of Urinary Tract. E. N. Cook, Rochester, Minn.—p. 692.
Gluconic Acid as Urinary Acidifying Agent. I. R. Sisk and O. Teichert, Madison, Wis.—p. 699.
Further Clinical and Laboratory Observations of Mandelic Acid. G. Carroll, B. Lewis and L. Kappel, St. Louis.—p. 710.
Human Prostatic Infection with Brucella Abortus (Alcaligenes Abortus). M. L. Boyd, Atlanta, Ga.—p. 717.
Schistosomiasis Japonicum with Vesical Involvement Thirty-Seven Years After Infection. W. G. Hayward, Jamestown, N. Y.—p. 722.
Infections of Urinary Tract Due to Shigella Alkaliscens. E. Nett, Buffalo.—p. 727.
Mechanical Aid in Transurethral Prostatic Resections. B. E. Ellis, Hubbard Woods, Ill.—p. 731.

Nephrectomy for Hypertension.—Boyd and Lewis cite a case in which the true condition (arterial hypertension) was brought to light only after bilateral simultaneous exposure of the adrenals and kidneys followed by nephrectomy. The patient was relieved of his symptoms and his blood pressure returned to normal. The preoperative clinical studies placed the case in the category of malignant hypertension. If an infarct had not occurred nephrectomy probably would not have been done. The clinical result, to date, justifies the procedure. Experimental work on the subject of hypertension by Goldblatt seems to strengthen this view.

New England Journal of Medicine, Boston

218: 87-866 (May 19) 1938

Some Newer Aspects of the Alcohol Problem. T. Leary, Boston.—p. 827.

Nephritic Toxemias of Late Pregnancy: Clinical Study. L. E. Phaneuf and M. O. Belson, Boston.—p. 834.

218: 867-904 (May 26) 1938

The Growth of the Boston City Hospital from 1864 to the Present. M. Moore, Boston.—p. 867.

Ascorbic Acid Requirements in Early Infancy. T. H. Ingalls, Boston.—p. 872.

*Effect of Sulfanilamide on Rheumatic Fever and Chorea. B. F. Massell and T. D. Jones, Boston.—p. 876.

Early Diagnosis of Cancer of the Cervix Uteri. W. Schiller, Chicago.—p. 878.

Disturbances of Bladder Function in Pernicious Anemia. C. J. E. Kickham and W. C. Moloney, Boston.—p. 880.

Foreign Bodies in Male Urethra: Report of Unusual Case. A. Riley, Boston.—p. 884.

Effect of Sulfanilamide on Rheumatic Fever and Chorea.—Massell and Jones used sulfanilamide in the treatment of fifty-eight patients with rheumatic fever and seven patients with chorea. Sulfanilamide was administered in divided doses with a total daily dose of approximately from 6 to 7 grains (0.4 or 0.45 Gm.) per 10 pounds (4.5 Kg.) of body weight during the first twenty-four hours, and thereafter from 4 to 5 grains (0.26 to 0.32 Gm.). The duration of therapy varied from a few days to as long as two months. Of the fifty-eight patients given sulfanilamide, rash and fever developed in thirty-one. In no case did sulfanilamide produce any symptomatic relief or shorten the course of rheumatic fever. Likewise sulfanilamide therapy had no effect on the natural course of the chorea in any of the seven patients.

Oklahoma State Medical Assn. Journal, McAlester

31: 153-184 (May) 1938

Shock. S. E. Kernodle, Oklahoma City.—p. 155.

Constipation. M. F. Jacobs, Oklahoma City.—p. 157.

Roentgen Therapy. L. S. McAlister, Muskogee.—p. 161.

Epidemic Encephalitis, St. Louis Type: Survey of the Outbreak, Summer and Fall of 1937. G. S. Bozalis and A. B. Jones, St. Louis.—p. 164.

Radiology, Syracuse, N. Y.

30: 537-666 (May) 1938

Production of X-Rays of Very Short Wavelength. W. D. Coolidge, Schenectady, N. Y.—p. 537.

*Calcification and Ossification of Kidney: Review of Literature and Report of Cases. A. E. Goldstein and B. S. Abeshouse, Baltimore.—p. 544.

Roentgenologic Study of Pineal Orientation: II. Comparison of Graphic and Proportional Methods in Proved Cases of Brain Tumor. W. W. Fray, Rochester, N. Y.—p. 579.

Study of Tissue Dosage and Radiation Effect in Cases of Operable Cancer of the Breast Treated by Combination of Preoperative Irradiation and Radical Mastectomy. F. E. Adair, E. L. Frazell and Edith H. Quimby, New York.—p. 588.

Practical Aspects of Calcification and Ossification in Various Body Tissues. B. P. Widmann, H. W. Ostrum and H. Freed, Philadelphia.—p. 598.

Roentgen Therapy of Dupuytren's Contracture. S. R. Beatty, Madison, Wis.—p. 610.

Calculation of Percentage Depth Doses. C. Packard, New York.—p. 613.

Importance of Statement of Tumor Dose in Radiotherapy. J. R. Nuttall, Manchester, England.—p. 622.

Focalograph: New Method for Examining the Target of a Roentgen-Ray Tube. E. K. Reid and L. F. Black, Washington, D. C.—p. 625.

Back Scatter and Its Effect on Dosage Measurements. R. S. Landauer, Highland Park, Ill.—p. 629.

Some Factors Influencing Distribution of Radiation Using a Two-Oblique-Field Technic. M. C. Reinhard and F. Miers, Buffalo.—p. 633.

Application of Roentgen Ray in Diagnosis of Conditions of Thymus Gland in Children. H. A. Judson, Los Angeles.—p. 636.

Calcification and Ossification of the Kidney.—Goldstein and Abeshouse state that in the human body calcification occurs either as a physiologic or pathologic process. Physiologic calcification is the normal process concerned with the deposition of calcium salts in the development and the formation of bone. Pathologic calcification includes the deposition or precipitation of calcium salts in those tissues or organs which ordinarily do not contain calcium deposits or concretions. For practical purposes they classify pathologic calcification into metastatic and nonmetastatic. In metastatic calcification the deposition of calcium salts presumably takes place in normal or uninjured

tissues, whereas the nonmetastatic type of calcification occurs in tissues or organs which are the site of localized changes predisposing to the deposition of the calcium salts. Nonmetastatic calcification may be further divided into dystrophic calcification, calcinosis, arterial calcification, stone formation and heterotopic ossification. The latter groups are briefly discussed only so far as they concern calcification of the kidney. Dystrophic calcification is the most common type of pathologic calcification encountered. Any dead or damaged tissue, infected or uninfected, so large or so situated that it cannot be absorbed, may become infiltrated with calcium salts. The location and distribution of these calcified lesions are extremely varied since every tissue and organ in the body is subject to retrogressive changes or lesions which predispose to the deposition of calcium salts. While this type of calcification is directly dependent on local retrogressive changes (fatty infiltration, hyalinization, necrosis and the like) which are the result of circulatory, toxic inflammatory or nutritional disturbances, the degree or extent of the calcification may be modified by general changes in calcium metabolism or in the amount of calcium in the blood or tissue fluids. The exact physicochemical changes involved in the deposition of calcium in the various types of pathologic calcification remain a matter of conjecture and controversy. The extremely variable degree of calcification observed in experimental and clinical conditions with hypercalcemia emphasized the difficulty of attempting to establish a predictable relationship between the degree of hypercalcemia and the deposit of calcium in the tissues. Any considerable increase in the concentration of serum phosphatase may disturb the equilibrium of calcium and cause a precipitation of calcium salts. Renal-pathologic calcification is discussed and classified into three distinct types: 1. Metastatic calcification of the kidney (Kalkmetastasen) which occurs in those various bone diseases accompanied by a hypercalcemia. 2. Nonmetastatic calcification associated with a renal lesion which causes a decreased solubility of the calcium salts of the blood and tissue fluids or results in the faulty or impaired excretion of calcium salts from the kidney—the so-called Kalkgicht of Schmidt. 3. Nonmetastatic (dystrophic) calcification associated with a renal lesion in which the precipitation of calcium salts occurs in tissues presenting degenerative, vascular or retrogressive changes. In type 1, the essential factor is an increase in the calcium salts of the blood which is due to the absorption of these salts from the bone lesions. The majority of these cases develop in the absence of a renal lesion. In type 2, the important factor is a renal lesion which may be primary or secondary. Hypercalcemia is not essential to this type of calcification although the degree of renal calcification is more marked in those cases accompanied by a transitory or permanent increase in the blood calcium. In type 3, the essential factor is also a renal lesion which may be of an infectious, obstructive, traumatic or neoplastic character. Hypercalcemia does not play a primary part in this type of calcification.

Tennessee State Medical Assn. Journal, Nashville

31: 165-208 (May) 1938

President's Address: Surgery of the Civil War. G. C. Williamson, Columbia.—p. 165.

Treatment of Recent Fractures of Neck of Femur by Moore Nails. H. E. Conwell and J. D. Sherrill, Birmingham, Ala.—p. 172.

Modern X-Ray Therapy. A. W. Erskine, Cedar Rapids, Iowa.—p. 175.

Behavior Disorders in Children. J. W. Bruce, Louisville, Ky.—p. 183.

Clinical Experiences with Acetyl-Beta-Methylcholine Chloride in Treatment of Functional Dysmenorrhea. J. C. Burch and Doris Phelps, Nashville.—p. 187.

The Newborn in the Hospital. J. Zahorsky, St. Louis.—p. 189.

Sphenopalatine Ganglion Neuralgia. C. K. Lewis, Memphis.—p. 193.

West Virginia Medical Journal, Charleston

34: 241-288 (June) 1938

Maternal Mortality. L. H. Douglass, Baltimore.—p. 241.

The Autopsy Situation in West Virginia. B. S. Brake, Clarksburg.—p. 248.

Treatment of Benign Uterine Hemorrhage by Irradiation. V. L. Peterson, Charleston.—p. 252.

Influenzal Meningitis Successfully Treated with Sulfanilamide. T. G. Folsom and K. E. Gerchow, Huntington.—p. 254.

Contact Ulcer of the Larynx. W. C. Thomas, Huntington.—p. 256.

School Program Planning. B. H. Pollock, Point Pleasant.—p. 260.

Tuberculin Tests at West Virginia University. F. R. Whittlesley, Morgantown.—p. 265.

Varicose Ulcer of the Leg. H. Jones, Circleville, Ohio.—p. 267.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

50: 221-266 (May) 1938

Studies in Nail Growth. W. E. Le Gros Clark and L. H. D. Buxton. —p. 221.

*Pemphigus: Review of Seven Cases. J. Kinnear.—p. 236.

Pemphigus.—Kinnear reports seven cases of pemphigus: two in children, both of whom recovered; one case of pemphigus vulgaris and one case of pemphigus foliaceus, both of which were fatal; two cases of acute pemphigus ushered in by erythema multiforme in young girls, one of whom died and one recovered, and one in a patient presenting symptoms of dermatitis herpetiformis who recovered. The author's experience with a complex carbamide compound of trisulfonic acid (germanin) coincides with that generally recorded. Its action may be dramatic, satisfactory, useless or apparently dangerous. Its use may be followed by high temperature, renal symptoms and/or cutaneous eruptions; e. g., late erythema. However, it does deserve a trial. P-benzylaminobenzenesulfonamide was used in one case apparently with some benefit. Although the author treated only two patients locally the results make it evident to him that tannic acid and acriflavine jelly, as used for burns, are the treatment of choice for pemphigus since all the advantages of this treatment as used in burns were duplicated.

British Medical Journal, London

1: 935-988 (April 30) 1938

Nasal Sinusitis in Childhood. J. Crooks.—p. 935.

*Clinical Experiment in Estrin Therapy. P. M. F. Bishop.—p. 939.

Leukopenia in Pneumococcal Peritonitis Treated by Sodium Pentose

Nucleotide. J. B. G. Muir.—p. 942.

Eclampsia: Statistical Review. G. G. Lennon.—p. 944.

Spontaneous Hematomyelia. J. M. Holmes.—p. 946.

Estrogen Therapy.—Estrogen is now well established as a therapeutic agent, but many problems remain to be solved before the most effective mode of administration can be determined. Bishop describes the effect of estrogen on a castrated woman (ovariectomy for cysts). Administration of estrogen in quite small doses by mouth was effective in controlling symptoms of hot flashes. The level of theelin threshold bleeding was found to be between 6,000 and 5,000 international units by injection and between 25,000 and 30,000 international units by mouth, suggesting a peroral/intramuscular ratio of 5:1. A 14 mg. tablet of crystalline theelin was implanted subcutaneously and was effective in controlling symptoms for four or five weeks.

Clinical Science, London

3: 91-246 (April 28) 1938

*Insulin Resistance and Arteriovenous Blood Sugar Difference. W. J. Griffiths.—p. 91.

Effect of Different Diets on Insulin Sensitivity of Diabetics. W. I. Card.—p. 105.

*Blood Circulation in the Human Limb: Observations on Differences Between Proximal and Distal Parts and Remarks on Regulation of Body Temperature. R. T. Grant and R. S. B. Pearson.—p. 119.

Effects of Asphyxia and Pressure on Sensory Nerves of Man. T. Lewis and E. E. Pochin.—p. 141.

Observations on Blood Circulation in Voluntary Muscle in Man. R. T. Grant.—p. 157.

*Observations on Referred Pain Arising from Muscle. J. H. Kellgren.—p. 175.

Delay of Pain Perception in Tabes Dorsalis. E. E. Pochin.—p. 191.

Unilateral Retraction of Upper Lid in Graves' Disease. E. E. Pochin.—p. 197.

Some Observations on Renin, a Pressor Substance Contained in Normal Kidney, Together with a Method for Its Biologic Assay. G. W. Pickering and M. Prinzmetal.—p. 211.

Further Observations on Familial Periodic Paralysis. E. N. Allott and B. McArdle.—p. 229.

Effect of Adrenalin on Serum Potassium Level in Man. L. I. M. Castleden.—p. 241.

Insulin Resistance and Arteriovenous Blood Sugar.—Griffiths studied the effect of an intravenous injection of insulin on the rise in arterial blood sugar following the ingestion of dextrose in a number of normal and diabetic subjects. Some diabetic patients are sensitive to insulin, which either diminishes or abolishes the rise in arterial blood sugar as in the normal subject; others exhibit considerable resistance to the hormone

so that the arterial hyperglycemia is little affected. A study of the arteriovenous blood sugar difference revealed that in spite of the disparity in the effects of insulin on the arterial blood sugar in these patients there is no corresponding difference in the peripheral action of the hormone, which in both types is less than it is in the normal subject. For this reason it is concluded that although in all diabetic patients there is an enfeeblement of the peripheral action of insulin, resistance to insulin as determined by the insulin-dextrose test is mainly due to the inability of the hormone to exert its entire control over the storage of sugar in the liver. The frequent occurrence of negative arteriovenous differences (venous sugar exceeding arterial) in the diabetic patient and their rarity in the normal subject is discussed. As yet no completely satisfactory explanation of these negative differences is possible. It appears that the insulin-sensitive diabetic person is suffering from a lack of insulin and that the symptoms of the insulin-resistant patient are, at least in part, due to the activity of some factor which opposes the action of insulin on the storage of sugar in the liver. The possible relation between the relative inability of insulin to control hepatic glycogenolysis in the resistant patient and pituitary dysfunction are discussed.

Blood Circulation in the Human Limb.—Grant and Pearson show that differences exist between the circulation in the human extremities, apart from that of the hands and feet, and the circulation in the more proximal parts. In measuring change of cutaneous temperature and blood flow of the proximal parts precautions are required to exclude the effect of venous blood returning up the limb from the extremities. While in the extremities sensory stimuli applied to the body cause vasoconstriction, they have either no effect or cause vasodilatation in the forearm and leg. Small doses of epinephrine regularly cause an increase of the volume of the limb and an increased flow of blood in the forearm and leg due to vasodilatation in the voluntary muscles. The vasodilator reaction to epinephrine is increased after sympathectomy. In man, as in other animals, circulating epinephrine is not the factor responsible for the return of vascular tone following sympathectomy. The vascular changes in the distal and proximal parts of the limb are described in response to alterations of body temperature. Increased blood flow through active voluntary muscle exerts a conspicuous effect (by the conduction of heat) on the temperature of the overlying skin. Warming the body and muscular activity have a bearing on the maintenance of body temperature, both local and general. The arteriovenous anastomoses of the extremities play a greater part than was heretofore realized in maintaining the temperature of the limbs and in regulating body temperature.

Referred Pain Arising from Muscle.—Using the injection method Kellgren investigated the character and extent of the muscular pain provoked when solutions of sodium chloride were injected into muscles, tendons and the periosteum. He found that fascia and tendon sheath give sharply localized pain, while muscles give diffuse pain which is referred. The diffuse pain from a given muscle is always distributed within certain regions, though the distribution within these limits varies from person to person and according to the part of the muscle stimulated. Pain arising from the muscles may be confused with pain arising from other deep structures such as the joints and the testis. The distribution of the diffuse pain from muscles appears to follow a spinal segmental pattern. This pattern differs from that of the segmental innervation of the skin. Referred pain from muscles is associated with referred tenderness of the deep structures. It is suggested that the impulses responsible for pain from muscles and the other deep structures may follow a final common path in the central nervous system. Diffused pain might be explained by the pain fibers from muscles having diffuse instead of accurate central synaptic connections.

J. Royal Inst. Public Health and Hygiene, London

1: 439-498 (May) 1938

Treatment of Tuberculosis of Joints. J. G. Johnstone.—p. 453.

Air Conditioning in Relation to Public Health and to Diseases of

Respiratory Tract. H. Roche.—p. 473.

Public Health Aspects of Personal Hygiene. V. Borland.—p. 477.

Artistic Pursuits and the National Fitness Campaign. Agnes Scott.—p. 485.

Lancet, London

1: 977-1032 (April 30) 1938

Malignant Hypertension. A. Ellis.—p. 977.

*Some Deficiencies of Nutrition and Their Relation to Disease: III. Nutrition and Nervous System, with Special Reference to Polyneuritis and Subacute Combined Degeneration of Cord. C. C. Ungley.—p. 981.

Treatment of Meningococcal Meningitis with Sulfanilamide. T. Crawford and G. B. Fleming.—p. 987.

*Action of Testosterone Propionate on the Female: Clinical Applications and Dosage. G. L. Foss.—p. 992.

Unusual Case of Lead Poisoning. J. N. M. Chalmers and S. L. Tompsett.—p. 994.

*Prevention of Complications During Gold Therapy in Tuberculosis and Arthritis. K. Secher.—p. 996.

Nutrition and Disease of Nervous System.—Ungley presents evidence which justifies the belief that polyneuritis associated with alcoholism, pregnancy and gastrointestinal lesions is due, in some cases at least, to nutritional deficiency. Etiologic factors are low intake, poor assimilation and increased utilization of vitamin B₁. According to Strauss (1936), the neurologic manifestations do not differ from beriberi either clinically or pathologically. The cases described were characterized by sensory as well as by motor involvement, a fairly symmetric distribution affecting most of the distal parts of the extremities, with little or no increase of protein in the cerebrospinal fluid. There were mental symptoms in some instances. Low values for vitamin B₁ have been found in the blood in alcoholic polyneuritis and polyneuritis secondary to pyloric stenosis and a moderate value in polyneuritis of pregnancy undergoing spontaneous recovery. The excretion of vitamin B₁ in the urine was low in all cases and the response to test doses was slight or delayed. A response to vitamin B₁ therapy after a control period without improvement was observed in some cases, but the effects were not dramatic. Improvement was slow, owing perhaps to the time required for regeneration in severely damaged neurons. The possible role of deficiency of other food factors, particularly vitamin A, needs further consideration. Vitamin B₁ appeared to be without influence on other forms of polyneuritis. It is probable that subacute combined degeneration of the cord, like pernicious anemia, is the result of a nutritional deficiency based on a gastric defect. At present there is no conclusive evidence that any substance lacking the characteristic effect of liver on hemopoiesis in pernicious anemia can arrest the progress or influence the course of subacute combined degeneration of the cord. Most cases of subacute combined degeneration of the cord could be prevented by early recognition, accurate diagnosis and efficient treatment of pernicious anemia. With adequate liver treatment, preferably parenteral, the nervous lesions can be arrested. No case of subacute combined degeneration of the cord, however severe, should be abandoned without recourse to intensive parenteral liver therapy.

Action of Testosterone Propionate in Women.—The outcome of animal experiments with testosterone propionate has led to its use as a remedy for excessive and irregular uterine bleeding due to hyperfolliculinemia in women, especially as Zuckerman's work was fairly conclusive that it caused no undesirable secondary effects, except perhaps enlargement of the clitoris. Foss used testosterone propionate in sixteen cases and found that for most patients total doses of from 300 to 800 mg. are required, according to the severity and duration of bleeding and the nature of the disorder to inhibit endometrial proliferation. In some cases of menorrhagia cyclic doses of from 20 to 40 mg. given twice a week for a few months are sufficient to counteract follicular overaction or to restore a cyclic rhythm in metrorrhagia. In severe cases a total dose is required of from 800 to 2,000 mg. given in daily injections of 100 mg. or injections given twice a week of from 150 to 200 mg., the individual dosage being adjusted to the clinical history. Metrorrhagia and menorrhagia can as a rule be controlled by injection of testosterone propionate in adequate doses. Two patients have proved refractory to treatment, even with large doses of testosterone propionate. No harmful effect, however, has been noticed in the sixteen patients.

Complications During Gold Therapy.—According to Secher, the reactions provoked by double sodium gold thio-

sulfate therapy in tuberculosis and arthritis are attributed to liberation of toxins from tuberculous or rheumatic lesions. They may be prevented or checked by giving large doses of vitamins A, B and C before and during treatment.

Medical Journal of Australia, Sydney

1: 721-760 (April 23) 1938

Public Health Legislation: Its Evolution in South Australia. A. R. Southwood.—p. 726.

Concoction of Spirits from the Time of Galen Onward. E. F. Gartrell.—p. 730.

Indications for Blood Transfusion. I. J. Wood.—p. 731.

Observations on Morbidity in Tropical and Subtropical Queensland. A. H. Baldwin.—p. 733.

Indications for Interference During Labor. A. M. Wilson.—p. 738.

Tubercle, London

19: 337-384 (May) 1938

*The Modern Outlook on Tuberculin. H. J. Parish.—p. 337.

Etiology of Bronchiectasis: Its Experimental Production and Clinical Study. W. E. Adams and L. Escudero.—p. 351.

Desensitization in Treatment of Tuberculous Guinea Pigs. J. D. Thayer.—p. 365.

Tuberculin.—Parish discusses the preparation and purification of tuberculin, the stability of dilutions of tuberculin, the reactions in the laboratory following inhalation of tuberculin, the standardization of tuberculin and tuberculin in diagnosis, treatment, prophylaxis and veterinary practice. The term tuberculin as he uses it includes all preparations which have a specific irritant effect on the sensitized cells of man or animals infected with tuberculosis. The specific active principle, called purified protein derivative, is of protein nature and is the best reagent so far produced for diagnostic tests in man. Its preparation and obvious advantages over old tuberculin are discussed. The possibility of acute general tuberculin reactions of varying severity among laboratory workers has frequently been recognized. The symptoms arise from the inhalation of either dry preparations or of minute particles of liquid tuberculin dispersed by centrifugation, bubbling when tuberculin is being "stewed down" or other manipulation. Headache, dyspnea, a tight feeling across the chest, perspiration and slight pyrexia have been observed, entailing absence from work for two or three days. Lassitude persisted for a week or longer. In the past, it is possible that the association with tuberculin may have been unrecognized by some bacteriologists, who may have diagnosed the symptoms as influenza or asthma. The Mantoux test should replace all others in the diagnosis of tuberculous infection, for it permits accurate and graduated dosage. In connection with these tests, the extraordinary property possessed by tuberculin of adhering to glassware must not be overlooked. Tuberculin plays an increasingly important part in the diagnosis and prognosis of tuberculosis in man and is also invaluable in epidemiologic studies. Treatment with tuberculin, which is little used at present, might possibly be resumed under carefully controlled conditions. In veterinary practice, the intradermal test with potent tuberculin is highly specific in cattle and is a reliable indication of the presence of infection. It is being used increasingly to build up tuberculosis-free herds in England. While no claims have been made in recent years for the protective value of old tuberculin, prominence has been given to two suspensions of tubercle bacilli; namely, BCG and Spahlinger vaccine. The activity of these preparations probably does not depend on their tuberculin content. The role of BCG vaccine in the prevention of tuberculosis has not yet been fully established. Any immunity induced by the method appears to be incomplete and of short duration. It is believed by many workers that BCG is a more efficient antigen than dead tubercle bacilli, although the latter will produce tuberculin allergy and confer sufficient protection on guinea pigs to justify further clinical trial. The object in using Spahlinger vaccine is to reproduce natural conditions of growth. No heat or chemical is used to kill the bacilli, which are allowed to die naturally in one year or more (Spahlinger, 1932). Full details of the method of preparation have not yet been divulged. While the results indicate that the vaccine may have some protective effect, further investigations are required in the laboratory and elsewhere.

Annales de Médecine, Paris

43: 333-452 (May) 1938. Partial Index

- Common Icterus, Its Infectious Nature. J. Troisier.—p. 338.
 *Intolerance and Catarrhal Icterus. J. Caroli.—p. 344.
 Acute Benign Hepatonephritis. J. Vague.—p. 360.
 Metabolism of Sodium in Course of Common Icterus. M. Brulé, R. Sassié and J. Cottet.—p. 380.
 Treatment of Benign Icterus by Duodenal Tubage. P. Harvier.—p. 389.
 Treatment of Catarrhal Icterus by Chologogues. E. Chabrol.—p. 398.

Intolerance and Catarrhal Icterus.—Caroli points out that intoxication, often of alimentary origin, is the cause of a number of cases of benign icterogenic hepatitis. He reviews a case the anaphylactic origin of which appears certain, since it developed in connection with a serotherapeutic accident. An injection of antitetanus serum was followed by severe headaches. From the twelfth day on, the urine contained biliary pigment; all possible care could not prevent the appearance of jaundice, but for three more days the icterus remained latent, while the migraine persisted with almost intolerable severity. When on the fifteenth day the signs of biliary retention became manifest, the severe headaches disappeared. Following a discussion of the macroscopic aspects of the liver, the histologic aspects of the sections, the chemical analysis of the bile and the results of the intervention, the author emphasizes that this case demonstrates that an edema of anaphylactic origin may be the cause of an icterogenic hepatitis. He says that this is by no means the first observation that a catarrhal icterus has been preceded by signs of intolerance, particularly by urticaria. In an earlier report he pointed out that preicteric rheumatism, by its frequent association with urticarial eruptions, constitutes together with them a prodromal complex of spontaneous serum disease. Urticaria may assume the aspects of Quincke's edema. On the other hand, certain cutaneous eruptions have a similar semeiologic value. Dyspeptic disorders are often entirely absent; it is as if the cutaneous disorders served as their equivalents. The author further directs attention to the antagonism between the urticarial symptoms and the icterus, for the cutaneous manifestations cease instantly on appearance of the signs of biliary retention. Arthralgias are often associated with urticaria or Quincke's edema. The author points out that the violent preicteric headaches may be of anaphylactic origin and an equivalent of urticaria and arthralgia. The author further cites from the literature instances revealing the role of intolerance in icterus. He mentions the icterus that develops in connection with anti-syphilitic therapy, with the use of chloroform, with alimentary intoxication and so on.

Archives des Maladies de l'Appareil Digestif, Paris

28: 329-432 (April) 1938

- Inverted Cecum and Chronic Subhepatic Appendicitis. F. Trémolières, A. Bergeret and A. Maurice.—p. 329.
 *Studies on Vitamin C Metabolism: Physiologic Aspects of Metabolism During Spontaneous Conditions and After Saturation. M. Vauthey.—p. 351.
 Glycosuria and Diabetes with Cancer of Pancreas.—J.-V. Grott.—p. 361.

Metabolism of Vitamin C.—In this paper Vauthey reports further studies on the vitamin C metabolism (see also *Archives des maladies de l'appareil digestif* 28:230 [March] 1938; abstracted in *THE JOURNAL* of June 4, 1938, page 1963). He shows that the comparison of the results of the various tests are highly instructive, particularly the differences in the values that are obtained in an organism moderately charged with vitamin C and in one artificially charged with vitamin C. He studied the fasting ascorbura first in the course of the normal metabolism and then after saturation; that is, after the person had been given daily for ten days 100 mg. of ascorbic acid. He found that the saturation doubled the fasting ascorbura. Then he studied the basic ascorbura after progressive saturation. Whereas the five day average of basic ascorbura is 0.94 under ordinary conditions, it rises to 1.39 in the course of five days of progressive saturation and to 1.60 at the end of another five days of progressive saturation. The third group of tests carried out by the author were those concerning the twenty-four hour excretion, first under normal conditions, then after ten days of progressive saturation and finally after massive saturation. He considers the twenty-four hour excretion after the massive saturation as the most important and the most

interesting test. In making the latter examination he used a modification of Youman's test, in which 600 mg. of ascorbic acid is given. This test, for which he found in the normal state a numerical value (from 28 to 29 per cent of the ingested dose) exactly intermediate between that of American (30 per cent) and English authors (27 per cent), seems to give for a normally charged organism a constant and relatively fixed result. The test is of great value; in the clinic its total results make it possible to determine in a given case whether the organism is charged with or has a deficiency of vitamin C; by its fractionated results of the first hours it indicates the quality and intensity of the digestive resorption of the administered vitamin C.

Presse Médicale, Paris

46: 849-864 (May 28) 1938

- Resistance of Bones and Site of Fractures of Long Bones by Indirect Causes. H. Rouvière.—p. 849.
 *Epidemiologic Aspects of Epidemic Encephalitis in Japan. R. Inada.—p. 851.
 Vascular Spasm Provoked "in Vitro"; Experimental Study with Aid of Isolated and Surviving Vascular Piece. A. Mougeot.—p. 853.

Epidemic Encephalitis in Japan.—Inada surveys epidemic encephalitis in Japan during the years from 1924 to 1935 inclusive. He shows that in some regions of Japan, particularly in those bordering on the sea of Japan, epidemic encephalitis is frequent and exists almost constantly, whereas in other regions epidemics occur interruptedly, and in still other regions epidemic encephalitis occurs only sporadically. The number of cases of epidemic encephalitis occurring annually during the years from 1924 to 1935 are listed in a table. This tabular report indicates that the epidemic of 1924 was the most severe; then follow in the order of their severity the epidemics of 1935 and 1929. The more severe epidemics seem to recur at intervals of five or six years. In other tables the author lists the monthly incidence of the cases of epidemic encephalitis. These tables indicate that the morbidity culminates during August and September. The author thinks that a maximal morbidity during the summer months constitutes one of the characteristics of the Japanese type of epidemic encephalitis. Discussing the incidence of epidemic encephalitis in the two sexes, the author shows that the morbidity is greater in men than in women (124 to 100). Further he shows tables indicating the incidence of epidemic encephalitis in different age groups during the various epidemics as well as the mortality rate for the different age groups. The tables indicate that the mortality is greatest in the higher age groups. The author says that reinfections are extremely rare. Discussing individual predisposition he says that nervousness, neurasthenia and other disorders of the nervous system seem to reduce the organism's resistance to epidemic encephalitis. Overexertion, mental as well as physical, and exposure to the hot sun seem to be predisposing factors. The author cites other climatologic factors that seem to be of significance in the development of epidemic encephalitis.

Revue Française de Pédiatrie, Paris

13: 565-684 (No. 6) 1938

- *Recent Cases of Grave Familial Icterus of the Newborn. M. Péhu, R. Noël and A. Brochier.—p. 565.
 Diet of Children of School Age. E. Lesné and G. Dreyfus-Sée.—p. 612.
 Prophylaxis of Tuberculosis in Schools. G. Dreyfus-Sée.—p. 638.
 So-Called Pernicious Anemia with Deviations in Hematologic Picture of Infant. S. Van Creveld and P. J. Zuidema.—p. 656.
 Treatment of Diabetes Mellitus in Children by Free Diet. A. W. Vetter.—p. 662.

Familial Icterus of the Newborn.—In this extensive report Péhu and his associates discuss Pfannenstiel's type of grave familial icterus of the newborn. Their report covers seventy familial series, sixty-five of which they collected from the recent literature and five of which they observed themselves. After calling attention to the growing interest in this disorder during recent years, they define the subject, give a historical review, cite cases from the literature and then describe their own observations. They point out that grave familial icterus can no longer be regarded as a rare disorder. In recent years the cases of grave familial icterus in the newborn seem to have multiplied and the authors think that this is due to the fact that attention has been called to this disorder and that obstetricians

and pediatricians think of this type of icterus and are able to recognize it clinically and hematologically. A study of the pathologic antecedents of the parents of families with grave icterus of the newborn reveals some interesting factors. It has been observed that in families with this form of icterus the first or the first two or three infants are free from the icterus. While this rule is not absolute, it is nevertheless observed in the majority of cases and it is a phenomenon that is difficult to explain. The obstetric antecedents are often quite interesting. A review of a number of familial series reveals not only deaths from grave icterus, that is mortality of the newborn, but also an increased number of abortions, premature deliveries and stillbirths. This has been known for a long time, but it is only since von Gierke demonstrated the pathologic identity of fetoplacental dropsy, of grave icterus (type Pfannenstiel) and of the anemia of the newborn that more attention has been given to this polymortality. After citing a number of familial histories illustrating this polymortality, the authors discuss the aspects of the blood in grave familial icterus of the newborn. It appears well established that in the majority of cases an erythroblastemia exists, but this anomaly is not constant. In some authentic cases it is missing. The authors enumerate the cases of grave icterus without erythroblastosis but show that in some of these cases the examination was not sufficiently detailed. They emphasize that in grave familial icterus of the newborn it is indispensable that the blood be examined from the first hours after birth and that it be repeated several days in succession for a week. After directing attention to the desirability of the examination of the bone marrow in cases of grave familial icterus, the authors discuss the prophylaxis and treatment. They admit that in view of the uncertainty about the pathogenesis and the pathologic physiology there is as yet no truly rational treatment. Nevertheless, it has been recommended that hepatic preparations be administered during the last three months of gestation. The authors think that this is too late and that the duration of the medication is insufficient; they suggest that the treatment be instituted when the intrahepatic erythropoiesis begins in the embryo; that is, about the fourth month. In order to avoid the development of a state of intolerance toward the medication it may be discontinued from the end of the fourth to the beginning of the seventh month. The use of vitamin C during pregnancy has also been suggested. After birth, the blood of the child must be kept under careful observation and if necessary blood transfusion should be resorted to. In the final chapter the authors cite several problems that still await solution.

Schweizerische medizinische Wochenschrift, Basel

68: 577-640 (May 21) 1938. Partial Index

- Prognosis of Old Fracture of Navicular Bone of Hand. A. Brunner.—p. 587.
- *Differential Pressure of Cerebrospinal Fluid in Cerebral Traumatism. P. Decker.—p. 588.
- Treatment of Fracture of Patella. M. Dubois.—p. 597.
- *Massage of Vascular Wall and of Surroundings of Veins in Treatment of Subsidied Phlebitis and Thrombophlebitis. C. Henschen and F. Becker.—p. 599.
- Nonpuerperal Osteomalacia Treated by Ovariectomy. A. Jentzer and R. Weyeneth.—p. 602.
- Treatment of Inferior Prognathism. C. Julliard.—p. 609.
- *Experiences with Catgut. A. Ritter.—p. 620.

Pressure of Cerebrospinal Fluid in Cerebral Traumatism.—Decker discusses the possible causes of the increase in intracranial tension after cerebral traumatism and the treatments that aim at the dehydration of the brain. He points out that this method is not without danger for, if continued too long, it may give rise to the phenomenon that is referred to as toxic dehydration. Consequently, it is important to know when to suspend the dehydration. The author found that his determination of the differential pressure of the cerebrospinal fluid is of value in this respect. He measures the pressure of the cerebrospinal fluid at the beginning and at the end of lumbar puncture during which a definite amount (perhaps 1 cc. of fluid) is extracted. In one case of commotio cerebri, the pressure at the beginning of the lumbar puncture was 22 cm., after the extraction of 1 cc. of fluid it was 17 cm., and after the extraction of 2 cc. it was 13 cm. Thus the differential pressure per cubic centimeter was 4.5 cm. Repeated lumbar punctures

revealed that this differential pressure subsided gradually. The author gained the impression that the differential pressure during a number of cases of cerebral traumatism seems to be related to the variations in the cerebral volume, which are the result of the edema. He thinks that the study of the differential cerebrospinal pressure can aid in directing the treatment of the post-traumatic cerebral disturbances, particularly if the treatment consists in dehydration.

Massage in Phlebitis.—Henschen and Becker say that massage in phlebitis can mobilize a latent infection or even elicit an embolism. However, the authors recommend massage only after the phlebitis or thrombophlebitis has subsided. The signs of inflammation must have subsided. The vein in question must no longer be sensitive to pressure. In case of deeper processes on the leg, the pressure points medial to the tibia must be tested. Moreover, all the manipulations for the detection of a latent phlebitis should be used. To detect a subfascial inflammation, pronation of the foot, or adduction, hyperextension or exterior rotation in the hip joint for the purpose of eliciting pain have been recommended. Moreover, subjective pains in the muscles and nocturnal muscular spasms must have subsided. Body temperature and pulse rate must have returned to normal. The sedimentation speed must either have become normal again or be on the decline. Moreover, the authors also used the Aldrich-MacClure test. In case of an accelerated resorption of the wheal, they regarded massage as too early. If the various tests and examinations disclose that the phlebitic process has subsided, the authors begin the massage with a mild effleurage. It serves to detect possible painfulness and changes in the pulse frequency and discloses whether real massage of the veins and the surrounding tissues can begin. In view of the purpose for which it is employed, massage consists chiefly in stroking and rubbing manipulations. The authors mention first the longitudinal massage of the saphenous veins, consisting in a loosening of the tissues surrounding the veins and in a light massage of the venous walls. Then there is the oblique massage of the branches of the veins, which influences the tissues surrounding the veins, and then the veins themselves. There is rolling massage and finally indirect elongation massage by means of alternating flexion and extension of the leg. In evaluating venous massage, the authors stress that it promotes the metabolic processes of the venous wall by way of improving the circulation of the vasa vasorum; that it softens the venous wall, exerts an antispasmodic action, accelerates the blood stream, improves the function of the venous valves and has an indirect effect on the joints which may be involved in the phlebitic process and so on.

Experiences with Catgut.—Ritter cites a number of still unsolved questions that arise in connection with the use of catgut in surgery. In order to clarify these problems, a questionnaire was submitted to a number of Swiss surgeons and the author summarizes the answers. He found that in spite of many theoretic objections to the use of catgut, and the partial inadequacy of the chemical methods of sterilization, catgut is used extensively as suture and ligature material. Various amounts of iodine or other chemicals are contained in the different types of catgut, but there is little difference in sterility. The forms of catgut which are marketed ready for use are practically sterile. In the cases in which catgut was suspected as being the source of an infection this could not be proved. Since the sterility of the catgut of thin caliber is more reliable than that of the thicker threads, the author thinks that whenever possible the thin catgut should be used; if necessary, it could be doubled. Sterilization of catgut in the general routine of the operating room is probably too complicated and not always feasible. A substitute for catgut, a resorbable preparation made from muscles of horses, has not proved entirely satisfactory; nevertheless the author thinks that science, technic and industry should make all efforts to develop a satisfactory substitute. In order to increase the tensile and knotting strength and to prolong the time of resorption, catgut has been impregnated with metals such as chromium, gold, silver, copper and mercury. Experiences with the catguts impregnated with gold or chromium have been favorable, but these preparations do not have distinct advantages over iodized catgut. The reports of Swiss

surgeons differ from reports in the foreign, particularly French, English and American literature, as regards disturbances of the healing process caused by transmission of bacteria from nonsterile catgut; in this respect, the Swiss reports are negative. The Swiss, like others, complain of irritations due to reactions to the introduction of the foreign body and its chemical contents. However, in contradistinction to the foreign reports the Swiss surgeons did not observe allergic reactions to catgut.

Arch. Ital. d. Mal. d. App. Diger., Bologna

7: 215-326 (May) 1938

- *Secretory Gastric and Pancreatic Functions in Heart Diseases. A. Bologna and A. Costadoni.—p. 215.
Gastric Secretion and Action of Belladonna: Experiments. R. Ginoulhiac.—p. 255.
Liver Reactions and Cholecystitis in Experimental Typhilitis. E. Monzardo.—p. 273.
Liver Treatment in Gastric Diseases: Researches on Action of Liver Extracts on Curve of Gastric Secretion. A. Crisafulli and L. Livrea.—p. 305.
Behavior of Bactericidal Power of Gastric Juice in Achylia, Normal Gastric Acidity, Hypoacidity and Hyperacidity. A. Sebastianelli.—p. 316.

Stomach and Pancreas in Heart Diseases.—According to Bologna and Costadoni, the development of gastric disorders and gastralgia is frequent in diseases of the heart. The authors followed the behavior of the gastric and pancreatic functions in sixty patients ranging in age from 16 to 81 years who were suffering from heart disease. They found that gastralgia is rare and unrelated to the circulatory insufficiency. It is due to atheromatosis of the abdominal aorta and its visceral branches. More rarely it is due to intermittent claudication of the stomach or to acute or chronic coronary atherosclerosis. Insufficient digestion is in direct relation to decompensation and the seriousness of circulatory insufficiency and venous stasis of the gastric wall. Generally the cardiac disturbances overshadow the gastric disorders, although in some cases the reverse is true. The diagnosis of insufficient digestion is easily made. The therapeutic test is of value in doubtful cases. Digestive disorders of cardiac origin are controlled by administration of cardio-kinetic drugs rather than by digestive substances. In grave decompensation with peripheral edema there is stasis of the gastric juice during fasting. The total and free hydrochloric acid are low or there is an acidity. The gastric secretion contains a large amount of mucus. The gastric secretion is normal, however, in some cases of mild decompensation. External and internal functions of the pancreas are normal in compensation and diminished in decompensation. The author concludes that decompensation induces diminished function of the digestive tract and the pancreas. The venous stasis from decompensation causes anatomic injury of the stomach, intestine and pancreas, which may be permanent if stasis is grave or repeated.

Rivista di Clinica Pediatrica, Florence

36: 385-480 (May) 1938

- Neurosympathetic Disequilibrium and Myocarditis in Diphtheria. G. Frontali.—p. 385.
*Sedimentation Speed of Erythrocytes in Some Diseases of Children, Especially Pretuberculosis. G. Vanni.—p. 397.
Still's Disease: Lesions of Lymph Nodes. S. Levi.—p. 409.
Relations Between Iodine in Blood and Basal Metabolism in Children. G. Macciotta.—p. 425.
Platelets in Blood of Newly Born Infants. F. Rasi and M. Bolletti.—p. 430.

Erythrocyte Sedimentation in Pretuberculosis of Children.—Vanni followed the behavior of the sedimentation speed of erythrocytes in the blood of eighty-five normal children and of forty-one who were suffering from either tuberculosis or a pretuberculous or nontuberculous disease. The determinations were made after the first hour in the Westergren test. The author concludes that the speed of the erythrocyte sedimentation in normal children aged from 1½ to 14 years varies from 14 to 8 mm. Figures from 14 to 16 mm. are normal, especially in children under 4 years of age. The average difference between samples of blood taken during a period of fasting and of digestion, respectively, or at different intervals during the day is about 2 mm. The average difference in two tests made simultaneously on the same sample of blood is about 1 mm. Variations of only a few millimeters in the results of a test in

comparison with normal figures or with those obtained in previous or following tests have no significance as to results. There are certain slight increasing or diminishing collective periodic variations in the results of the test of sedimentation of the erythrocytes that are of unknown cause; they may last for five or six days and then disappear. The sedimentation speed of erythrocytes is normal in children who have pretuberculosis and adenopathies and give a positive reaction to tuberculin. It is increased in grave forms of tuberculosis and in tuberculous and benign lymphocytic meningitis, as well as in malignant lymphogranuloma. It is slightly increased in subacute diseases of the respiratory tract and in erythema nodosum.

Deutsche Zeitschrift für Chirurgie, Berlin

250: 263-358 (May 11) 1938

- Hemorrhoids and Rectal Varices. R. Neumann.—p. 263.
*Fat Embolism and Its Treatment. E. Rappert.—p. 276.
Traumatic Rupture of Pericardium. H. Peter.—p. 295.
Intracardial Injections. E. von Novák.—p. 310.
Experimental and Clinical Studies on Use of Local Anesthesia in Inflamed Tissues. H. Rosenthal.—p. 325.
Treatment of Pleural Empyema. M. Mennenga.—p. 348.
Contribution to Pathology of Esophagus. L. Unterrichter.—p. 354.

Treatment of Fat Embolism.—According to Rappert, there were sixty-nine severe cases of fat embolism observed at the Second Surgical University Clinic in Vienna between Jan. 1, 1933, and May 1, 1937. A differentiation is made between fat embolism of the lesser circulation alone and that of the lesser and greater circulation. Fat embolism of the greater circulation alone is theoretically possible in the presence of patent foramen ovale. Clinically, however, it has never been observed. The symptoms of fat embolism of the lesser circulation are dyspnea, cyanosis, small, fast, almost imperceptible pulse, pale, waxy-yellow skin and restlessness. The symptoms of fat embolism of the greater circulation are disturbances of consciousness, convulsions, paralyses, rise of temperature, oliguria and anuria. Secondary anemia, shock and multiple rib fractures are to be considered in the differential diagnosis. Both surgical and medical therapeutic measures so far proposed for this condition were without result. The therapeutic problem, according to the author, consists in reducing the large droplets of fat which obstruct the capillaries to smaller droplets in order to enable them to pass through the pulmonary filter. The well known fat solvents and emulsifiers failed to accomplish this in animal experiments. With the use of decholin (sodium salt of dehydrocholic acid) in combination with circulatory stimulants and a papaverine preparation the author was able to save experimental animals after injecting into them several times the fatal dose of fat. On the basis of his animal experiments and the use of sodium dehydrocholate in severe clinical cases of fat embolism the author developed the following scheme of treatment: The patient must be kept at absolute rest and, if necessary, given opiates. A drip transfusion is instituted and sodium dehydrocholate is administered in large doses (from 200 to 300 cc. of a 20 per cent solution daily). The effect of sodium dehydrocholate is prompt and is manifested in quiet, deep respiration, the disappearance of cyanosis and an improved pulse. The effect of the sodium dehydrocholate can be enhanced by the exhibition of a 25 per cent solution of pyridine betacarboxylic diethylamine, metrazol and other drugs. The effect of sodium dehydrocholate can be further improved by administration of a papaverine preparation, which has the effect of dilating pulmonary capillaries. Renal complications such as oliguria and anuria were treated with sodium dehydrocholate, caffeine, a papaverine preparation, theophylline with ethylenediamine and prolonged diathermy of the kidney. The treatment of fractures is undertaken several days after the disappearance of symptoms of fat embolism and even then in a careful manner. The injection of large doses of sodium dehydrocholate is apparently harmless. It produces icterus, which however does not last more than twenty-four or forty-eight hours. The author stresses the advisability of repeated massive blood transfusions to combat anemia. Of the forty-nine patients not subjected to this treatment, only one survived (2 per cent); of the twenty patients treated with sodium dehydrocholate, seven (35 per cent) have survived.

Fortschritte a. d. Gebiete der Röntgenstrahlen, Leipzig

57: 439-544 (May) 1938. Partial Index

- Experimental Studies on Venous Air Embolism. B. Kerber.—p. 439.
Displacements, Protrusions and Movement of Mediastinum Due to Rare Unilateral Changes of Pulmonary Tissue. M. Dahm and H. Schmitt.—p. 454.
External Contour of Stomach. K. Steuer.—p. 467.
New Method of Radiologic Demonstration of Articular Cartilage, Particularly of Semilunar Cartilages of Knee Joint Without Injection of Contrast Medium. Y. Nordheim.—p. 479.
Roentgenologic Diagnosis of Cretinous Hip and Osteo-Arthrosis Cretinosa. E. Feistmann-Lutterbeck.—p. 506.
*Making Roentgenograms of Heart During Certain Phases of Its Action. H. Ludwig.—p. 515.

Roentgenograms of Heart.—Ludwig stresses that roentgenograms which are made to determine the size of the heart must be made during a certain phase of the cardiac action. Studies on fluctuations in the size of the heart are reliable only if they are based on exposures that are made always during the same phase of the cardiac action. The author describes and illustrates a simple apparatus which makes possible the elicitation of an exposure during a definite phase of the heart action. Exposures were taken with the aid of this apparatus revealed that the differences between the maximum and minimum of the transverse diameter of the heart may be considerable under identical conditions, that is, caused only by the action of the heart. These differences are in most cases in excess of 5 mm.

Medizinische Klinik, Berlin

34: 665-696 (May 20) 1938. Partial Index

- *Smoking in Pathogenesis of Internal Diseases. R. Schmidt.—p. 665.
Poliomyelitis. A. Nemecek.—p. 669.
Clinical Aspects of Adrenal Disorders. W. Hollmann.—p. 670.
Concordant Occurrence of Hypertrophy of Prostate in Set of Uniovular Twins. O. Kaufmann.—p. 680.

Smoking in Internal Diseases.—Schmidt says that the effect of tobacco smoking is not identical with the action of the alkaloid nicotine but involves a number of other factors as well. For this reason he avoided the term nicotine poisoning. It cannot be denied that there are persons who smoke much and still feel well and reach an advanced age although it would be illogical to conclude from this that smoking is entirely harmless. In considering the effects of smoking it is necessary to pay attention not only to the process of smoking but also to the condition of the smoker. In some persons the moderate use of tobacco may be not only permissible but even desirable. In this connection the author mentions Bezecky's observation that in some cases of chronically relapsing aphthae smoking has been known to have beneficial effects. Nevertheless, since immunity to the ill effects of nicotine is difficult to determine and since the harmful effects are rather frequent and severe, a general campaign against smoking is justified. After pointing out that smoking may have a sedative as well as a stimulating action, the author takes up the sensitization that may result from the use of nicotine and mentions other factors that play a part in this nonspecific sensitization, such as congenital weakness of some organs, endocrine disorders, latent infections, metabolic anomalies, exogenic intoxications and excessive exertion. In the so-called erethistic asthenic types these factors are most likely to exert their full effect. Moreover, these persons seem to crave stimulants as well as sedatives more than do others and thus a vicious circle is set up. The author further discusses the disorders caused by nicotine in the digestive tract, circulatory apparatus, nervous system, endocrine glands and respiratory tract. Discussing the factors that increase the harmful effects of tobacco, he mentions the smoking of the last third of the cigaret or cigar (increased nicotine content), the smoking of fresh and moist cigars, the smoking of tobacco that has only been dried and has not undergone fermentation, the inhalation of smoke and smoking on an empty stomach. With regard to the breaking of the nicotine habit, the author says that complete abstinence is better than mere reduction in quantity, for the smoking of one cigar or cigaret readily leads to another one. The demand for abstinence is the more urgent, the more serious the disorder (angina, sclerotic hypertension, intermittent claudication) and the more certain it is that the nicotine plays an important part in the pathogenesis of the process. In case of sudden withdrawal there may be a tem-

porary increase in nervousness and congestions but there are never threatening symptoms. Measures that may be helpful during the beginning of the period of abstinence are chewing of gum or of lozenges or irrigations with 0.1 per cent solution of silver nitrate. If possible, the time of complete withdrawal should be arranged so that it concurs with the beginning of a vacation.

Zentralblatt für Chirurgie, Leipzig

65: 1089-1136 (May 7) 1938. Partial Index

- Indications, Technique and Results of Operative Treatment of Bland Venous Thrombosis. A. Löwen.—p. 1089.
Treatment of Congenital Fistulas of the Neck. P. E. A. Nylander.—p. 1095.
Preliminary Choledochotomy. F. I. Kaiser.—p. 1097.
Bursitis Calcarea Subdeltoidaea. H. Knüpper.—p. 1099.
Vertebral Tuberculosis and Tuberculosis of Genito-Urinary Tract: Spontaneous Healing of Vertebral Caries. J. Rivoir.—p. 1107.
*Renal Tuberculosis. P. Clairmont and F. Schaffhauser.—p. 1115.

Renal Tuberculosis.—According to Clairmont and Schaffhauser, every case of tuberculosis calls for examination of the genito-urinary tract. The finding of tubercle bacilli in the urine demands a cystoscopic examination, determination of renal function and ureterocatheterization, in order to demonstrate the localization of the lesion. One hundred and fifty-three patients admitted to their clinic (Zurich) were treated by practicing physicians for chronic cystitis for a period of not less than three months; seventy-nine of these cases were not properly diagnosed and sixty were considered cystitis. Conservative treatment in cases of renal tuberculosis leads to the extension of the disease to the kidneys, the bladder and the genitalia. Such patients are a source of danger to their community because of the excretion of tubercle bacilli in their urine. The authors feel that primary tuberculosis of the renal pelvis probably does not exist. Temporary encapsulation of a tuberculous focus in the kidney is relatively rare. As a rule the tuberculous lesion progresses to involve more renal tissue with caseation, cavity formation and extensive destruction of the organ. Complete isolation of a tuberculous focus from the excretory urinary passages by scars is possible. They emphasize the frequent occurrence of severe toxic nephritis in the nontuberculous kidney which may disappear after the removal of the tuberculous kidney, although in many cases it may be the cause of fatal uremia. Spontaneous cure of chronic caseating renal tuberculosis has been reported only twice, once by Castaigne and once by Wildbolz. The authors quote the work carried out in their own clinic by Dimtza and Schaffhauser, in which 225 patients with extrarenal tuberculosis were studied by the method of animal tests and culture of tubercle bacilli. Of the thirteen patients in whom tubercle bacilli were demonstrated in the kidney urine, necropsy showed eleven to have renal tuberculosis. The important question from a therapeutic standpoint is whether the clinical diagnosis of an early caseous renal tuberculosis, based on the demonstration of the bacilli, the pyuria and the diminished function, constitutes per se an indication for nephrectomy. The question of bilateral involvement in the early cases is a difficult one. The indication for nephrectomy in unilateral early tuberculosis is established when repeated examinations over a fairly long period of time demonstrate that the other kidney is not tuberculous and that the involved kidney shows signs of progression of the disease, a considerable pyuria and a diminished function. Conservative treatment is not justified because one cannot expect a spontaneous healing of even a small caseating focus. The earliest symptoms are frequently those of cystitis. In about 17 per cent of the cases a typical renal colic may be the first manifestation. Every case of renal colic without a demonstrable stone should arouse suspicion of tuberculosis. In about 5 per cent the first symptom is hematuria, which is, as a rule, painless. The cardinal symptom of renal tuberculosis is the demonstration of tubercle bacilli in the urine. Patients with unilateral renal tuberculosis treated conservatively die, as a rule, in the course of five or six years. As contrasted to this high mortality the authors quote almost 80 per cent of permanent cures following early nephrectomy, and from 50 to 60 per cent for the late cases. The authors therefore stress the early diagnosis and the earliest possible nephrectomy in unilateral renal tuberculosis.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia

78: 889-952 (April 19) 1938

Differentiation of Types of Leprosy Patients from Endemiologic Point of View. P. H. J. Lampe.—p. 890.

*Etiology of Tropical Sprue and Related Diseases. B. C. Hopman.—p. 904.

Vitamin B₁ Content of Certain Indian Foodstuffs. W. F. Donath and J. P. Spruyt.—p. 915.

Further Studies on Xerophthalmia. G. A. Hadikoesoemo.—p. 935.

Etiology of Tropical Sprue.—Hopman, after pointing out that various theories have been advanced about the cause of tropical sprue (infection, vitamin deficiency and so on), discusses the metabolic conditions under different latitudes but particularly in the tropics. If a person from the northern latitudes comes to the tropics, his energy consumption and blood pressure are decreased, as is also the production of the digestive juices; in fact the entire metabolism is at a lower level and it becomes necessary to reduce the intake of food, particularly foods with high caloric value such as fats. If carbohydrates and fats are taken in too large quantities for the prevailing metabolic conditions or if the organism utilizes inadequate amounts, various disorders may result. In this connection the author discusses the etiology of such disorders as obesity, diabetes mellitus and sprue. Obesity develops when fats and carbohydrates are absorbed by the organism but are not entirely utilized for energy production and become deposited under the skin or in the organs. Glycosuria develops when the carbohydrates are no longer all absorbed by the organism but are eliminated with the urine. Sprue seems to be connected with an excess of fats; after a hyperfunctioning of the liver and pancreas there develops a dysfunction of both organs, particularly the liver; the bile acids are secreted in inadequate quantities and thus the fats are not properly absorbed and large quantities of fatty acids and of cleavage products of fat are found in the stools. Under the influence of the inadequate utilization, abnormal processes of fermentation, borborygmus and meteorism develop and it is probable that toxins are formed. As the result of the poor utilization of the fat, swellings of the mucosa develop. Secondly there is an impairment in the absorption of other foodstuffs. Vitamin B deficiency anemia and emaciation develop. The fact that sprue is more frequent in adults and in sedentary workers than in children and in persons who do physical work the author traces to the greater energy requirements of children and of physical workers. The morning diarrhea in sprue he ascribes to the fact that during the night the energy metabolism is at a minimum so that many unutilized fats are eliminated. The failure of liver therapy in sprue is due, he thinks, to the fact that it counteracts a symptom rather than the cause of the disease. The author reaches the conclusion that obesity, diabetes mellitus and sprue are safety valves which protect the organism against overheating if excessive amounts of calories are taken in. Moderate intake of food and sufficient exercise are helpful in the treatment and prevention.

Acta Chirurgica Scandinavica, Stockholm

81: 1-98 (May 12) 1938

Condition of Tongue in Dehydration and Intestinal Motor Paralysis. E. Kirk.—p. 1.

*Intussusception. T. Björkroth.—p. 5.

Double Kidney: Case. B. Bager.—p. 36.

Effect of Inflation of the Stomach on Blood Circulation. H. Wahren.—p. 43.

*Electrocardiographic Examinations of Operative Patients. N. H. Brodersen.—p. 57.

Importance of Electrocardiography for Judgment of Risk of Operation and by Thoracoplasty for Pulmonary Tuberculosis. A. Jervell.—p. 64.

Importance of Preoperative Electrocardiography. O. Römcke.—p. 77.

Lobectomy and Pneumonectomy for Bronchiectasis and Bronchial Stenosis. J. Holst.—p. 87.

Intussusception.—Björkroth states that among twenty-one patients treated at the Norrköping Hospital for intussusception between 1900 and 1937 there were fifteen cases due to functional invagination, three caused by a tumor, and three cases caused by Meckel's diverticulum. He stresses the diagnostic as well as the therapeutic value of the opaque enema. It was administered in seven recent cases, in six of which typical

pictures of intussusception were obtained. The treatment in the first group was operative. Reduction was possible in eight, resection was necessary in two and there was a spontaneous reduction disclosed at operation in one. An attempt to reduce the intussusception by opaque enema and manipulation was tried in two but was only partially successful and was therefore followed by operation. Because little contrast material can be made to pass the ileocecal valve, manipulation can give little information as to the completeness of the reduction, nor can it have any effect on an intussusception situated at a higher level. The better results obtained in recent years both by manipulative and by surgical means are due to earlier diagnosis. The partial disinvagination brought about by an opaque enema makes the subsequent surgical correction easier. In the four cases of invagination caused by tumor, three were adenomas of the small intestine and one a lipoma. There is possibly no difference between polyposis of the small and the large intestine. The lesser tendency to malignant degeneration on the part of the polyps of the small intestine is probably due to the fact that they are exposed to less irritation than those of the colon and that they are detected early because they give rise to complications at an early stage.

Electrocardiographic Examinations of Operative Patients.—Brodersen states that preoperative cardiographic studies on patients past 50 years of age disclosed abnormalities in forty-eight of 100. In the group of fifty-two patients with normal electrocardiograms there occurred eight postoperative fatalities, which, however, were not due to cardiac complications. There were likewise eight postoperative fatalities in the group of forty-eight patients exhibiting abnormalities in the electrocardiograms, but in only one of these was the death caused by the heart condition (coronary infarct). Temporary postoperative fibrillations occurred in two cases in which the electrocardiogram had previously been found normal. There occurred no cardiac complications, apart from the one fatal case, among the forty-eight patients whose electrocardiograms exhibited deviations from the normal. No patient in the group was denied operation because of the electrocardiographic observations. The author concludes that electrocardiographic irregularities cannot be accepted unreservedly as a contraindication to operative intervention. The doubtful alterations may be disregarded altogether, while the definite alterations must be considered individually. The history and the clinical symptoms are to be considered of greater importance than the evidence furnished by the electrocardiogram. Major operative interventions may be safely carried out in patients with positive electrocardiograms but with compensated hearts.

Hospitalstidende, Copenhagen

81: 365-392 (April 19) 1938

Focal Infection, Especially Stomatogenic: VI, Experimental Investigations on Etiology and Pathogenesis of Chronic Disorders of Joints: Attempts with Streptococcus Strains of Higher Virulence. E. Jarlöv and O. Brinch.—p. 365.

Id.: VII, Attempts with Streptococcus Strains of High Virulence. E. Jarlöv and O. Brinch.—p. 374.

Id.: VIII, Control Experiments with Nonarthrophile Streptococcus Strain. E. Jarlöv and O. Brinch.—p. 377.

Blood Sugar Curve During Lumbar Anesthesia Together with Variations in Blood Sugar as Criterion for Disorder of Adrenals During Operations on Kidney (Preliminary Report). K. Kalbak.—p. 380.

*Hemangioma Cavernosum of Interosseus Muscles of Hand: Case. F. Sprensen.—p. 387.

Hemangioma of Interosseus Muscles.—A woman aged 47 had had a swelling of the dorsal side of the right hand for a year, without preceding trauma, which increased somewhat and caused tenderness and pain. Sprensen reports that external examination together with roentgen examination pointed to a lipoma (pseudofluctuation, rhabdomyoma or sarcoma). Operation revealed a cavernous hemangioma in the interosseus muscles which had developed partly by growing through and partly by pushing aside the surrounding tissue, and because of its localization to the interstice the cavernoma had caused deviation and atrophy of the adjacent metacarpal bones. The case is unique because of the changes in the bones. The tumor contained fully developed bone tissue, which supports the theory of an embryonal disturbance as the cause. Complete removal of the tumor resulted in recovery.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 111, No. 3

COPYRIGHT, 1938, BY AMERICAN MEDICAL ASSOCIATION
CHICAGO, ILLINOIS

JULY 16, 1938

CLINICAL RESEARCH IN PRIVATE PRACTICE

WINGATE M. JOHNSON, M.D.
WINSTON-SALEM, N. C.

"Let your light so shine before men, that they may see your good works" (Matthew 5:16).

A recent book by Stuart Chase has a most fascinating title—"The Tyranny of Words." The very name is enough to stimulate endless reflection as to how almost everybody, no matter how intelligent, is influenced, if not dominated, by the meaning attached to certain words or phrases. How contradictory may be one's reactions to different terms with virtually the same meanings! For example, it makes all the difference whether a woman is called "slender" or "skinny," "fat" or "pleasingly plump"; whether a man is called "generous" or "spendthrift," "thrifty" or "stingy," "conservative" or "a mossback reactionary," "liberal" or "radical"; whether he is said to have "the courage of his convictions" or to be "as stubborn as a mule." A college student appreciates being told he has the power of concentration but resents being called a "dig" or "grind." No doubt the central character in the Bible's best known parable was often flattered, so long as his money lasted, by the ancient equivalent of "He's a jolly good fellow" before he was immortalized as the Prodigal Son.

To most doctors, doubtless the first and most important meaning of the word "research" is work done in a great laboratory with thousands of dollars' worth of apparatus. The second idea suggested is a large hospital, with hundreds of patients separated into two great groups labeled "test" and "control." Perhaps a third conception is some such project as was recently completed by the United States Public Health Service, aided by one of the alphabetical arrangements of the federal government, in which a survey of nearly 800,000 families in the nation was made in order to find out what any intelligent high school student could have predicted—that there was more sickness in the families on relief and with annual incomes of less than \$1,000 than in the upper income group. Apparently the conclusion was reached—which the same high school student would know is erroneous—that the only remedy needed is to have as many doctors' visits made to the low income group as to these in the higher brackets. While this conclusion is extremely flattering to our profession, none know better than we how sadly this

low-income group needs sufficient food and warm clothing and adequate houses and fuel even more than it needs doctors' visits.

The average family doctor is likely to be so overawed by the majesty of the word "research" that he refuses to entertain for a moment the thought that he himself is capable of doing it while engaged in active practice. In truth, however, he is in a better position to do clinical research because he is in practice. Instead of working with rats, rabbits and guinea pigs, he has at hand the finest material in the world to use for study—the human beings who come to him for treatment. One can carry on one bit of investigation after another, or work on a number of problems together, and do better work for having a stimulating new interest added to the daily routine of practice. An utterly false conception of research is that it makes a man cold, heartless and indifferent to human suffering.

Before we tamely submit to the tyranny of the fearsome word "research," let us see just what it does mean. According to the Standard Dictionary, Webster concurring, it means "diligent protracted investigation, especially for the purpose of adding to human knowledge; studious inquiry." "Clinical," of course, is derived from the Greek word "klinikos," meaning "of a bed," with a second less aristocratic choice of ancestry in the Low Latin "clinicus," meaning "bedridden person." Our title, then, means "a studious inquiry of bedridden (or sick) people." Certainly every general practitioner worth his salt does just that every day of the week, including Sunday. It is the first part of the definition that may be forbidding at first glance; but closer inspection should make us feel more kindly toward it. Surely every doctor with a puzzling professional problem in the form of a serious, long drawn out illness will make "diligent protracted investigation" into the cause and (if possible) cure of his patient. When he has found the answer, if his experience will help other doctors solve similar problems, of course he will want to share his knowledge with his colleagues by telling them about it, thereby "adding to human knowledge" and engaging in "research" unawares. If, instead of a single patient studied intensively, a series of similar cases offers an opportunity to compare different methods of treatment or to evaluate a new remedy, a statistical study forms the basis for research of a different sort, but also valuable. Then, if the doctor extends his audience from a few friends to the county, district or state society or a medical journal—or both—he is indeed "adding to human knowledge." Any one who has ever done any bit of investigation knows that he himself profits more than anybody else. It is almost, if not quite, an invariable rule that he who tries to teach others will learn far more than he will teach.

THE ABILITY OF FINDING VALUABLE
THINGS UNEXPECTEDLY

I wish that every doctor in North Carolina could have heard Dr. Milton J. Rosenau's address to the State Public Health Association last year on "Serendipity." Let me hasten to explain that Serendipity was the name that Marco Polo gave Ceylon and that Dr. Rosenau got his title from a fairy story of three princes of Serendip who "went about the world seeking adventures and making discoveries, by accident and sagacity, of things they were not in search of."

The doctor who carries into the practice of medicine something of serendipity will be repaid many times over; but he should also remember and absorb the famous saying of Pasteur "Chance favors the prepared mind" and have his mental antennae tuned to catch any important message that may come his way. It was the prepared mind and the spirit of serendipity that enabled Ambroise Paré to forsake the brutal method of dressing gunshot wounds with boiling oil; that made William Withering learn from an old woman the value of digitalis; that impelled John Hunter to do his pioneer work in surgical pathology and to elevate surgery from a trade to a profession; that gave to us through Jenner vaccination against smallpox; that caused William Beaumont to turn a French-Canadian's gunshot wound into an opportunity to study the physiology of gastric digestion; that led Crawford W. Long to use ether for anesthesia; that made Oliver W. Holmes and Semmelweis grasp the true explanation for childbed fever; that inspired Pasteur in his many brilliant discoveries; that gave Koch his triumphant discovery of the tubercle bacillus; that opened Roentgen's eyes to the wonderful possibilities in a Crookes tube. Coming to more modern times, the prepared mind of George Minot found a cure for pernicious anemia; Banting's isolated insulin; von Jauregg's recognized the value of malarial paroxysms in dementia paralytica; our own William MacNider's has made him an international authority on the kidney; our own David Smith's has taught us to treat pellagra and staphylococcic septicemia.

The family doctor in the small town or rural district has at least one distinct advantage over the hospital worker: his practice is a much more stable one, and it is easier to follow up his cases and so evaluate the results of treatment. His patients are also apt to be more intelligent and so more cooperative than are those who come to the wards and dispensaries of a great hospital. Those who have heard Dr. Walter C. Alvarez talk must have been impressed by the emphasis he places on the use of one's five natural senses, plus the priceless ingredient of common sense. Moreover, while the country doctor may not have the elaborate facilities of a great laboratory, he should have a few test tubes, a Bunsen burner or alcohol lamp, a microscope, a blood counting apparatus, glass slides, a few stains and the chemical reagents required to make the simple tests often needed to confirm a clinical diagnosis. Wassermann tubes are to be had for the asking, and the state laboratory sends reports promptly not only on Wassermann tests but also on typhoid, undulant fever and other serologic examinations.

With such aids to an adequately taken history and a complete physical examination, the family doctor should be able to diagnose and treat most of his patients himself and to know when the help of a surgeon or specialist is needed. Then if he will train himself from the beginning to keep records of his patients, he will be

laying the foundation for one piece of research after another. The habit of keeping in mind for study some problem, or even several problems, adds immeasurably to the zest of practice. It gives the spice of adventure to what may otherwise become deadening routine. Furthermore, the answer to a hard professional riddle may be found because one has the riddle in mind. Only too many of us are like the Negro who, when something was explained in terms he could understand exclaimed "Why, I never thought to think about that." Recently a brilliant research worker in physics said that when any important discovery in physics is announced it is at once tried out in his laboratory. Almost invariably he finds it easily duplicated with his apparatus. All that was necessary was the thought to think about it. The same thing could be said of many, if not most, great medical discoveries.

ESSENTIALS FOR CLINICAL RESEARCH

Oliver Wendell Holmes said that in Paris he learned three things from the great Louis: "Not to take authority when I can have facts, not to guess when I can know, and not to think a man must take physic because he is sick." These three principles are to be commended to every doctor as essential for true clinical research. Certainly no one should be satisfied to guess at the answer to any problem when it is possible to know, even though the solution requires some effort. And no matter how much any man may tower above his colleagues, his mere prestige does not make him infallible. The tremendous weight of Galen's authority kept the medical profession in the Dark Ages for more than a thousand years. But for the great force of Dupuytren's name—coupled, it must be confessed, with his brutality—appendicitis might have been recognized as a clinical entity when Melier first described it in 1827, nearly sixty years before Reginald Fitz's classic description of it was published. Fortunately the great Pasteur, in spite of his gentle nature, had enough native resolution under the surface successfully to oppose the die-hard authorities of his day and so to deserve the honor of fathering modern medicine.

Now, happily, while any new work is subject to keenly critical evaluation, we do not see the savage assaults on all new ideas or the jealous distrust of the younger members of the profession that prevailed in the days of Dupuytren and Pasteur. It is fortunate that new methods of diagnosis and treatment do have to run the gantlet of critical study; for thereby is the public protected from excessive enthusiasm, which Da Costa once said is "as dangerous as prejudice." It is true, however, that never in the world's history has the medical profession been so quick to assimilate and utilize new knowledge. In an incredibly short time, sulfanilamide has made a large place for itself. Just as soon as insulin could be standardized and placed on the market, it was being used all over the world. The value of liver in the treatment of pernicious anemia was speedily reflected in the soaring price of that hitherto humble article of diet. The serum treatment of pneumonia is being widely used and there is great interest in the exciting possibility that the x-rays may prove just as effective and far less taxing to the patient, physically as well as financially.

THE SHARING OF DISCOVERIES

One of the glories of the medical profession is that its members have no trade secrets. When any doctor, no matter whether a professor in a great medical school

or a general practitioner in an obscure rural section, makes a discovery that may benefit humanity, it is his duty to acquaint other doctors with it. With the multitude of medical journals now published, there is no valid excuse for any man to withhold any information he may have in return for what he learns from others. The two chief deterrents are false modesty and laziness.

Those who have read Marion Sims's fascinating story of his own life will recall his experience with his first published case report. He had operated for a double harelip and obtained such a remarkable result that a dental friend begged him to write a description for the *Journal of Dental Surgery*. When Sims objected that he had never written anything in his life, the dentist gave him the excellent advice "Write it as you would talk it, or as you have told it to me." When the journal with his article came, it was hidden behind some large books in his office. To his great dismay, some months later Dr. Ames, the leading practitioner of Montgomery and the most prolific writer, while on a social visit walked over to the bookcase, took down the volume that hid the dental journal, pulled it from its hiding place and began turning its leaves. Now let Dr. Sims¹ tell the story:

"I said to myself, 'My God! if he goes on in this way, he will come to the article on the "Lowndes County Girl's Harelip," and he will give me fits.' I was trembling like a leaf, as I stood there like a school boy. Still he stood there, turning over leaf after leaf, and when he got to where the case was described, he did not look up at all, or say a word, but stood there, reading it down on the first page, then on the other page, deliberately reading it through. It just occupied two pages. My heart was in my throat. As he finished the article he stood perfectly still, and I also stood perfectly still, trembling. As he turned around I thought, 'I shall get it now.'

"In a moment he said, 'What would I give if I had the faculty of expressing myself in writing like that?'"

No doubt Dr. Sims was quite sincere in his description of the agony of embarrassment he suffered; yet he was well repaid by the commendation of his colleague. A far higher reward, however, was the feeling that he had added to human knowledge.

In contrast, let me tell a story of how a country doctor narrowly missed fame and—far more important—an opportunity to save thousands of children's lives. Last summer a loquacious old lady, well past three score and ten, told me that her old family physician, a Dr. Anderson, who died some years ago in Iredell County, lost his first baby of cholera infantum. When his next child reached the second summer, it acquired the same ailment, was desperately ill for a few days, then began improving. One day he came on the baby's old colored nurse feeding it scraped apple. He began to berate her soundly, asking why she wanted to kill this baby after he had already lost his firstborn. "Well, doctor," she replied, when he paused for breath, "your baby is getting better, isn't it?" When he admitted that it was, she continued, "That's because I've been feeding it scraped apple. If you want it to get well, please let me keep on." Grudgingly he had to admit the force of her argument and agreed for her to go on with the treatment. Within a few days the baby was well, and so long as he lived

thereafter the good doctor used scraped apple regularly and successfully in diarrhea and dysentery. This was forty years before Birnberg published his first report in America of this now famous therapy. It is highly probable that Dr. Anderson's sense of modesty kept him from asking for a place on his medical society program or writing a report for a medical journal, in order to acquaint the world with his life-saving discovery; yet it was his duty to do so. He failed to obey the Scriptural command "Let your light so shine before men, that they may see your good works."

Laziness, I fear, is responsible for more sins of omission in recording our observations than is modesty; and by a process of rationalization it is easy to deceive oneself into thinking one is too modest to write when one is really too lazy. Every one who does any writing, even on a small scale, knows it is hard work; yet its difficulty is often exaggerated. The story is told of a cub reporter who had uncovered his first big story but was afraid he could not do justice to its news value. As he sat before his typewriter mopping his brow, a veteran noted his plight, walked over and, patting him on the shoulder, said "All you have to do, son, is to put down one little word after another." With a story to tell, any man with enough knowledge of the English language to get a medical diploma should be able to write it. The veteran reporter's wisdom was shown when he used the adjective "little" before "word." Oliver Wendell Holmes has aptly said "Never use a long word where a short one will serve the purpose. I know there are professors in this country who always 'ligate' arteries. Other surgeons only tie them, and it stops the bleeding just as well."

Soon after the "Life and Letters of Walter H. Page" was published, a friend gave me a copy at Christmas. While reading it, my 6 year old daughter came up behind me. She had been in the first grade four months and was anxious to use her new knowledge. "Daddy," she said, "let me see what I can read." For curiosity, I made a rough estimate of what she could understand and was surprised to find that she recognized about 70 per cent of the words used in one of Page's letters. I am not telling this story to show that I am the father of a child prodigy—God forbid!—but as proof that one of the world's greatest scholars ordinarily used words so simple that a first grade pupil could understand most of them. It helps us to clarify our own thoughts if we clothe them in the simplest language possible, and certainly it will help our readers to grasp them.

THE NEED OF RESEARCH

It is fortunate for many generations of his students as well as for his patients that the master clinician and teacher David Riesman² outgrew a youthful notion thus charmingly described by him: "A good many years ago a friend and I were . . . discussing the physical diagnosis of the heart. In our youthful ignorance we agreed . . . that it was a closed chapter, that all was known that ever could be known, and we had best devote our untapped energies in physical diagnosis to some other branch of medicine if we wanted to make discoveries. Little did we think that in a small provincial town in England a man at that very moment was blazing a new path in cardiac diagnosis, and that his work was to revolutionize a subject we

1. Sims, J. Marion: *The Story of My Life*, New York, D. Appleton Company, p. 215-216.

2. Riesman, David: *High Blood Pressure and Longevity and Other Essays*, Philadelphia, John C. Winston Company, p. 20.

believed to be perfect and unchangeable." In 1829 Andral wrote² "Since the publication of the immortal researches of Corvisart, and of numerous other works subsequent to his, which have still further enlarged the dominion of science, the history of diseases of the heart and its membranes is to be regarded as almost complete."

To any one who may feel that there is no further need for research, it is only necessary to suggest a few unsolved problems waiting for some Jenner, Pasteur, Banting or Minot: arthritis, asthma, hay fever, urticaria, migraine, epilepsy, peptic ulcer, spastic colitis, the common cold, sinusitis, granulopenia, essential hypertension, coronary heart disease, nephritis, ureteral stricture, encephalitis, much mental disease—and only too many others.

Doubtless the answer to many of our problems is as simple as was the liver treatment of pernicious anemia or the malarial treatment of dementia paralytica; yet it may be years before many of them will be solved. Others will require long, patient and persistent effort, in which some bit of keen observation by one of us may be as essential as the keystone to an arch. While occasionally an important discovery may be made by a brilliant flash of inspiration, far more are made by patient repetition of trial and error. Even the best will have more errors than successes; but the errors are soon forgotten while the successes are remembered. "We learn wisdom from failure much more than from success. We often discover what *will* do, by finding out what will not do; and probably he who never made a mistake never made a discovery" (Samuel Smiles).

The classic modern example of clinical research by a general practitioner is, of course, the research of Sir James Mackenzie. Soon after entering practice in the little Scotch village of Burnley he lost a young woman in childbirth from sudden heart failure. This harrowing experience made him resolve to learn all he could about heart disease, so that, if possible, he could avoid another such tragedy in the future. Finding little help in the literature available he began studying his patients themselves. For a score of years he kept accurate histories of all with cardiac irregularities. In order to record graphically the various types of pulse beats, he devised a crude but effective instrument for making pulse tracings on strips of smoked paper fastened to a revolving drum—a modification of the old Dudgeon sphygmograph, which he called the ink polygraph. At the end of twenty years he could say with authority which types of irregularity were dangerous and which were not. Then he began to publish the results of his study. First came a modest little volume called "The Study of the Pulse." Later he moved to London and published his monumental work, "Diseases of the Heart." He was literally forced into becoming a heart specialist and before his death was generally recognized as the one who had added more to our knowledge of the heart than any man since Harvey discovered the circulation.

Mackenzie had the great advantage, which he often emphasized, that he could follow his cases for periods of time impossible to those depending for clinical material on the floating population of a hospital or on the more unstable clientele of a city practitioner. He also often stressed the point that one could far more intelligently study one particular organ if one was familiar with the functions of the whole body.

Sir James used the same methods as did Hippocrates, who four centuries before Christ placed medicine on the highest plane it was to occupy until modern times. Instead of wasting his energy in useless speculation, Hippocrates studied every patient, recorded his observations, and compared results. It is an intriguing, though futile, speculation as to how many lives might have been saved had the medical profession followed his sane leadership instead of accepting as inspired the dogmatic statements of Galen. The really modern scientific method of observation taught and practiced by Hippocrates was forgotten in the blind worship of Galen's authority, and millions of lives were sacrificed on this altar.

One of the finest examples of surgical research by a general practitioner was that of J. Marion Sims. His prepared mind made one brilliant discovery after another; but his greatest "diligent protracted investigation for the purpose of adding to human knowledge" was learning to cure vesicovaginal fistula. While busy with a large general practice, he used all his spare time for four years in repeated operations on a few Negro slaves whom he kept at his own expense. One method after another failed. When his colleagues grew tired of assisting him, he trained the patients themselves to help. At length his family and friends begged him to give up a senseless undertaking before it ruined his practice and wasted all his financial resources. He persisted, however, and at long last the thirtieth operation on the Negro Anarcha was successful. In rapid succession others were cured of this distressing malady, and the foundation for the worldwide fame of Sims was laid. Years later he traveled abroad in a veritable triumphal march, operating in some of the most famous hospitals and on some of the most famous patients in Europe. He and other apparently tireless workers verify Matthew Arnold's definition of genius as "mainly an affair of energy" and the observation of Sir Joshua Reynolds that "If you have genius, industry will improve it; if you have none, industry will supply its place."

The temptation is to multiply examples, but time marches on and these are enough. I should like to tell of the numbers of papers read at various district meetings during the past year that showed the spirit of research. Some of the best came from small towns and rural communities. Rather than run the risk of discrimination, I shall not mention any by name. The past year has been one of the most profitable of my life, in that my travels over the state have afforded a continuous postgraduate course. Judging by the uniformly high order of the papers read in every district, the intelligence of the discussions, the eagerness of those attending the postgraduate courses and the spirit of research shown by so many of our men, the health of the people of North Carolina is in good hands.

O'Hanlon Building.

A Sick Pocketbook.—In other words, a sick pocketbook is more responsible for ill health than are certain supposed deficiencies in our system of providing medical care. These deficiencies can be corrected without disturbing the patient-physician relationship and without the injection of politically controlled third parties. In Pennsylvania, seventeen counties have had systems in operation which have proved to be efficient and economical. It is not necessary to build up elaborate departments to dispense medical services.—Borzell, Francis F.: *The Medical Profession and the Social Worker, Pennsylvania M. J.* 41:683 (May) 1938.

SITES OF METASTASES FROM CARCINOMA OF THE ANUS, RECTUM AND SIGMOID COLON

HARRY E. BACON, M.D.

AND

PHILIP D. GILBERT, M.D.

PHILADELPHIA

Except for a few individual reports, comparatively little has been written on the occurrence of metastases from malignant growths in the lower portion of the large bowel. For this reason, in order to discuss this subject on a factual basis, we have reviewed the records from the radiologic department of the Philadelphia General Hospital for the ten year period ending with 1936.

In 318, or 77.7 per cent, of a series of 409 cases of malignant process of the large bowel in which there was metastasis to one or more organs, as evidenced by biopsy, celiotomy, roentgenograms or necropsy, the primary site was in the anus, rectum or sigmoid colon. This confirms the observations of Larson and Nordland,¹ Heyd² and Rankin³ that metastasis is encountered more frequently with malignant growths in these parts than with such growths in the upper portion of the large bowel. In our series the primary growth was located in the rectum in 239 cases, in the sigmoid in seventy-five and in the anus in four.

Much discussion has taken place concerning the relationship between the clinical type, the size of the growth and lymphatic metastasis.

Omitting the histologic types of tumors, one may say that, just as a papilliferous growth is less liable to become malignant than one that is sessile, so metastasis is encountered less frequently when a malignant growth protrudes into the lumen (papilliferous carcinoma) than when it invades the wall. This has been observed by Craig and MacCarty,⁴ Dukes,⁵ McVay⁶ and Hayes.⁷ In 267, or 80.8 per cent, of our series of 318 cases, the growth was described as sessile.

McVay⁶ has shown that the size of the tumor cannot be relied on as an accurate index to the probable lymphatic involvement. Dukes expressed the opinion that there is no relationship between the surface area of the growth and the depth of penetration, because a large proliferating cancer may almost entirely occlude the lumen of the rectum yet be confined to the mucosa and submucosa, whereas a relatively small ulcerating lesion may have spread to invade the extrarectal tissue. In the series cited no attempt was made to measure the growth in the transverse or the longitudinal diameter, but it was observed that in all 267 cases at least three quarters of the circumference was involved.

This brings up several points for discussion. For instance, it has been observed that the spread of cancer of the rectum by continuity of tissue is a slow process.

Handley⁸ many years ago cited a case of rectal carcinoma in which, by staining of an entire section of bowel with mucicarmine, continuous spread was demonstrated in the submucosa beyond the gross limits of the tumor. He concluded that metastasis by this means occurs early and is frequent. Others, notably Cheate,⁹ Cole¹⁰ and Monsarrat,¹¹ were unable to confirm these observations and concluded that this was a rare case. Leitch¹² went so far as to repeat the experiment, using mucicarmine in a considerable number of cancerous rectums, but failed to find stained cells in the submucosa except for those which he believed were the ganglionic cells of Auerbach's plexus. At any rate, spread by continuity of tissue is undoubtedly a slow process.

Lymphatic metastasis is more rapid; according to Miles¹³ it occurs by means of the intramural lymphatic system and, after invading the external network, gives rise to extramural metastases long before the muscular coat has been penetrated by direct extension. Lockhart-Mummery,¹⁴ on the other hand, expressed the opinion that invasion of the lymphatics occurs only after penetration of the muscular coat. Dukes⁵ and Gordon-Watson¹⁵ concurred in the belief that such invasion is not found until the cancer has spread by direct continuity through the rectal wall into the extrarectal lymphatics. Examination of serial sections of the involved rectal wall and contiguous and extrarectal tissues was not possible in this series of cases.

No attempt was made to determine the duration of the growth by computing the period between the date on which the lesion was first recognized and the time at which metastasis became apparent. We did employ a less accurate method, that of adding six months to the period between the onset of symptoms and the time at which both local and remote metastases were noted. As previously reported,¹⁶ the average period from the onset of symptoms to recognition of the cancer in 1,031 of a possible 1,995 cases was nine months and three weeks. In this series of 318 cases, the average period between the onset of symptoms and the observation of extension or regional metastasis was eleven months and two weeks, whereas the average period between the onset of symptoms and observation of distant metastases (lungs, pancreas, vertebrae, spleen, renal capsule and heart) was nineteen months. If six months is added to each figure, the growths showing regional metastases had existed for seventeen months and two weeks, while those showing distant metastases had existed for twenty-five months. This closely parallels the estimated period of duration as expressed by Miles,¹⁷ in that growths involving three quarters of the circumference of the intestine had existed eighteen months or longer, for it will be recalled that they had done so in 267 cases of our series.

8. Handley, W. S.: The Dissemination of Rectal Carcinoma, *Brit. M. J.* 1: 584 (March) 1913; 1: 197 (April) 1910.

9. Cheate, G. L.: The Spread of Cancer in the Lower Part of the Large Intestine, *Brit. M. J.* 1: 303 (Feb. 7) 1914.

10. Cole, P. P.: The Intramural Spread of Rectal Carcinoma, *Brit. M. J.* 1: 43 (March 1) 1913.

11. Monsarrat, R. W., and Wilhaus, I. J.: Intramural Extension in Rectal Cancer, *Brit. J. Surg.* 1: 173, 1914.

12. Leitch, A., cited by Miles.¹³

13. Miles, W. E.: Cancer of Rectum, London, Harrison & Sons, 1926.

14. Lockhart-Mummery, J. P.: Diseases of the Rectum and Colon, ed. 2, Baltimore, William Wood & Co., 1934, p. 311.

15. Gordon-Watson, Charles, and Dukes, Cuthbert: Treatment of Carcinomas of the Rectum with Radium, with Introduction on Spread of Cancer of the Rectum, *Brit. J. Surg.* 17: 643 (April) 1930.

16. Bacon, H. E.: The Anus, Rectum and Sigmoid Colon, Philadelphia, J. B. Lippincott Company, 1938; Experimental Studies in Proctology, *J. M. World* 52: 617 (Nov.) 1934.

17. Miles, W. E.: The Pathology of the Spread of Cancer of the Rectum and Its Bearing upon the Surgery of the Cancerous Rectum, *Surg., Gynec. & Obst.* 52: 350 (Feb.) 1931.

From the Department of Radiology, Philadelphia General Hospital.

Read before the Proctologic Society of the Graduate Hospital, University of Pennsylvania, March 9, 1938.

1. Larson, L. M., and Nordland, Martin: Malignant Tumors of the Large Intestine, *Ann. Surg.* 100: 328 (Aug.) 1934.

2. Heyd, C. G.: Malignancies of the Rectum and Rectosigmoid, *Am. J. Surg.* 38: 230 (Nov.) 1937.

3. Rankin, F. W., and Fortune, C. H.: Metastasis to Thyroid Gland, *Ann. Surg.* 104: 36 (July) 1936.

4. Craig, W. McK., and MacCarty, W. C.: Involvement of the Lymph Glands in Carcinoma of the Cecum, *Ann. Surg.* 77: 698 (June) 1923.

5. Dukes, Cuthbert: Classification of Cancer of the Rectum, *J. Path. & Bact.* 35: 323 (May) 1932.

6. McVay, J. R.: Involvement of Lymph Nodes in Carcinoma of Rectum, *Ann. Surg.* 76: 755 (Dec.) 1922.

7. Hayes, J. M.: The Involvement of the Lymph Glands in Carcinoma of the Large Intestine, *Minnesota Med.* 4: 653 (Nov.) 1921.

The distribution as to age, sex and race is shown in table 1, and the sites of metastasis and local extension (in order of their frequency) are listed in table 2. Other sites of metastatic involvement not found in this series have been reported; they include the umbilicus,¹⁸ ureter,¹⁹ eye,²⁰ humerus,²¹ clavicle,²² sternum,²³ radius,²³ ulna²³ and supraclavicular nodes.²⁴

TABLE 1.—Distribution as to Age, Sex and Race

Age	Number	Sex	Number	Race	Number
10-20.....	1	Males.....	202	White.....	309
21-30.....	13	Females.....	116	Negro.....	8
31-40.....	36			Chinese.....	1
41-50.....	35				
51-60.....	85				
61-70.....	92				
71-80.....	52				
81-90.....	4				

A few decades ago Mayo²⁵ and McArthur²⁶ observed that the liver is usually the first remote organ affected. Pruitt²⁷ has estimated the frequency of hepatic metastasis to be 40 per cent, and while our percentage is similar to this it must be remembered that this report is based only on cases in which there was metastasis. So far as metastasis to lymph nodes is concerned, the large series of 1,112 cases reported by Buday²⁸ and Reichelmann²⁹ is worthy of mention. As cited by Pennington,³⁰ these two authors found involvement of the regional lymph nodes in 336 cases, or 30 per cent, and of the distant nodes in sixty cases, or 5.3 per cent.

Bargen and Larson³⁰ in a series of 260 cases noted the following involvement (verified by microscopic examination in 113, or 43.4 per cent): perirectal, seventy-one cases; mesenteric, fifteen; inguinal, fourteen; iliac, five; aortic, five; axillary, two, and omental, one.

Compared with these figures, the percentage of regional glandular involvement in our series is low (31.1). It should be remembered, however, that all the regional nodes were not removed or examined in each individual case. Quite recently, Brown and Warren³¹ found that in twenty-four, or 34 per cent, of seventy cases in which there was visceral metastasis, the lymph nodes failed to show involvement.

Aufses²¹ confirmed von Recklinghausen's²² order of metastasis to bone from carcinoma of the rectum as follows: vertebra, femur, ribs, skull, sternum, humerus, pelvis, sacrum, radius, scapula and ulna. In our series of cases, however, the order of frequency was sacrum, coccyx, pelvis, lumbar vertebra, dorsal vertebra, femur, ribs, skull, cervical vertebra and shoulder girdle.

18. Warner, F.: Carcinoma of the Umbilicus, Surg., Gynec. & Obst. 27: 204 (Aug.) 1918.

19. Rabs, M.: Bull. Soc. Anat. 1: 106 (Jan.) 1898.

20. Bargen, A. J., and Larson, L. M.: The Mode of Spread of Carcinoma of the Rectum, Minnesota Med. 16: 478 (July) 1933.

21. Aufses, A. H.: Skeletal Metastases from Carcinoma of the Rectum, Arch. Surg. 21: 916 (Dec.) 1930. Hayden.²² Pennington.³⁰ von Recklinghausen.²²

22. Hayden, E. P.: Cancer of the Rectum and Sigmoid, New England J. Med. 214: 401 (Feb. 27) 1936.

23. Aufses.²¹ von Recklinghausen.²²

24. Simon, G.: Bull. Soc. Anat. 2: 211 (Feb.) 1900.

25. Mayo, W. J.: Removal of the Rectum for Cancer, Ann. Surg. 51: 854 (June) 1910.

26. McArthur, S. S.: Carcinoma of the Rectum, Surg., Gynec. & Obst. 21: 495 (Oct.) 1915.

27. Pruitt, M. C.: Modern Proctology, St. Louis, C. V. Mosby Company, 1931, p. 305.

28. Buday, K.: Ztschr. f. Krebsforsch. 6: 1, 1908; quoted by Pennington.³⁰

29. Reichelmann, W.: Berl. klin. Wchnschr. 39: 723, 1902; cited by Pennington.³⁰

30. Pennington, R. W.: Treatise on the Diseases and Injuries of the Rectum, Anus and Pelvic Colon, Philadelphia, P. Blakiston's Son & Co., 1923.

31. Brown, C. E., and Warren, Shields: Visceral Metastasis from Rectal Carcinoma, Surg., Gynec. & Obst. 66: 611 (March) 1938.

32. von Recklinghausen, cited by Karsner and Clark.³³

Rankin³³ and Broders³⁴ observed a parallelism in the ratio of glandular involvement and the grade of malignancy and also that the absence of metastasis increases in inverse ratio to the grade of the malignancy.

The grade of the tumor and its relationship to metastasis in 260 of 560 cases of rectal carcinoma as cited by Broders³⁵ are as follows: eighty-two cases (14.65 per cent) of grade 1 cancer, with metastasis in 26.82 per cent; 290 cases (51.78 per cent) of grade 2 cancer, with metastasis in 44.13 per cent; 137 cases (24.6 per cent) of grade 3 cancer, with metastasis in 56.2 per cent, and fifty-one cases (9.1 per cent) of grade 4 cancer, with metastasis in 64.7 per cent.

These figures are consistent with those of Karsner and Clark,³⁶ except for grade 1: two cases of grade 1 cancer, with metastasis in 100 per cent; twelve cases of grade 2 cancer, with metastasis in 75 per cent; seven-teen cases of grade 3 cancer, with metastasis in 76 per cent, and seven cases of grade 4 cancer, with metastasis in 100 per cent.

On the other hand, in our series of 318 cases, in all of which there was metastasis, the grade of tumor according to Broder's classification was noted as follows: twenty-one cases, or 6.6 per cent, grade 1 cancer; 165 cases, or 51.9 per cent, grade 2; 117 cases, or 36.8 per cent, grade 3, and nine cases, or 2.8 per cent, grade 4. In six, or 1.9 per cent, the grade was not stated.

It is apparent that there is a vast difference in the series, which in itself deserves some explanation. It

TABLE 2.—Sites of Metastasis and Local Extension

Site	Number of Patients	Per cent age	Site	Number of Patients	Per cent age
Liver.....	128	40.0	Diaphragm.....	3	0.9
Regional glands.....	99	31.1	Lumbar vertebra.....	3	0.9
Peritoneum.....	59	18.6	Dorsal vertebra.....	3	0.9
Lungs.....	47	14.7	Broad ligament.....	3	0.9
Bladder.....	27	8.5	Heart (epicardium).....	2	0.6
Sacrum.....	22	6.9	Thyroid.....	2	0.6
Coccyx.....	18	5.7	Femur.....	2	0.6
Uterus.....	14	4.4	Ribs.....	2	0.6
Pancreas.....	11	3.5	Skull.....	2	0.6
Renal capsule.....	9	2.8	Buttocks.....	1	0.3
Prostate.....	8	2.5	Breast.....	1	0.3
Vagina.....	8	2.5	Duodenum.....	1	0.3
Spleen.....	7	2.2	Cervical vertebra.....	1	0.3
Inguinal glands.....	6	1.9	Shoulder girdle.....	1	0.3
Pelvis.....	5	1.6	Brain.....	1	0.3
Perineum.....	4	1.3	Testicle.....	1	0.3
Vulva.....	4	1.3	Mediastinum.....	1	0.3
Ovaries.....	4	1.3			

must be remembered that, first, several pathologists have reported on the gradings and, secondly, only a few specimens were examined serially. The second factor is important because we know that the arrangement and the differentiation of the malignant cells of rectal carcinomas are not uniform throughout the growth. It may also be mentioned, as in the cases cited by Dukes,³ that fragments removed for diagnosis differed in grade from the specimens excised at operation. Dukes noted also considerable discrepancy between the grade according to cell differentiation and the extent of spread. In discussing malignancy of the breast, Pfahler quoted Dawson and Tod³⁷ as follows: "These microscopic

33. Rankin, F. W., and Broders, A. C.: Factors Influencing the Prognosis in Carcinoma of the Rectum, Tr. South. S. A. 40: 133, 1927.

34. Broders, A. C.: The Grading of Carcinoma, Minnesota Med. 8: 774 (Dec.) 1925; Carcinoma Grading and Practical Application, Arch. Path. & Lab. Med. 2: 376 (Sept.) 1926.

35. Broders, A. C.: The Grading of Cancer: Its Relationship to Metastasis and Prognosis, Texas State J. Med. 29: 520 (Dec.) 1933.

36. Karsner, H. T., and Clark, Burton, Jr.: Analysis of 104 Cases of Carcinoma of the Large Intestine, Am. J. Cancer 16: 958 (Sept.) 1932.

37. Dawson, E. K., and Tod, M. C.: Prognosis in Mammary Carcinoma in Relation to Grading and Treatment, Edinburgh M. J. 41: 61 (Feb.) 1934; cited by Pfahler, G. E.: The Treatment of Carcinoma of the Breast, Am. J. Roentgenol. 39: 1 (Jan.) 1938.

grades of malignancy can only be determined after complete operation and study of the entire breast. While there is a general microscopic appearance in these tumors which permits classification . . . some characteristics of all these grades are apt to be found in some part of each tumor." Reimann³⁸ remarked: "The various grades of malignancy can be found in at least half the tumors encountered in a series such as we have at our hospital and probably 75 per cent if sufficient number of sections are taken from different areas." MacCarty³⁹ stated that different portions and even different areas in the same microscopic field show a different grade; the grades of the primary and of the secondary tumor vary; recurrent tumors are often different in grade from the primary tumor, and different grades have different criteria.

In comparing the grade of cancers in the upper and in the lower portion of the large bowel, Karsner and Clark³⁶ noted a much higher incidence of grades 3 and 4 in the former location. In our series there were 409 cases of malignant growth in the large bowel with metastasis; in 318 the process was in the anus, rectum or sigmoid colon and in eighty-one in the upper portion of the large bowel. In fifty-two of these eighty-one cases the grade of cancer according to Broders' classification was reported; in twenty-eight, or 53.8 per cent, the cancer was of grade 2; in sixteen, or 30 per cent, it was of grade 3, and in eight, or 15.4 per cent, it was of grade 4.

SUMMARY

In 318, or 77.7 per cent, of a series of 409 cases of malignant growth in the large bowel, in all of which there was metastasis, the primary site was in the rectum, sigmoid colon or anus.

In 267, or 80.8 per cent, the tumor was described as sessile. In the 267 cases, regardless of the type of tumor, approximately three quarters of the circumference of the bowel wall was involved.

In 318 cases the average period between the onset of symptoms and the observance of regional metastasis was seventeen months and two weeks, whereas the average period between the onset of symptoms and the observance of distant metastasis (e. g., to the liver or lung) was twenty-five months.

The greatest number of cases of primary cancer of the large bowel occurred during the fifth, sixth and seventh decades, men being more frequently affected than women.

Visceral metastasis was most prevalent in the liver, ranking first, with 40 per cent; metastasis to regional lymph nodes came next, with 31.1 per cent; with bony metastasis, the order of frequency was sacrum, coccyx, pelvis, lumbar vertebrae and so forth.

According to Broders' classification, in the greatest number of cases in our series, in all of which there was metastasis, the cancer was of grade 2 (51.9 per cent). In 36.8 per cent it was of grade 3.

CONCLUSIONS

Metastasis is more frequently encountered with a malignant growth in the lower portion of the large bowel than with such a growth in the upper portion.

Sessile growths are more prone to metastasize than papilliferous growths.

There is a period of approximately eight months between the first recognition of the tumor and the observance of regional and distant metastasis.

We were unable to support the contention that the percentage of metastases always is greater for the higher grades of malignancy.

Our studies show a predominance of grade 2 tumors.
1527 West Girard Avenue.

THROMBOCYTOPEN

A SUBSTANCE IN THE EXTRACT FROM THE SPLEEN
OF PATIENTS WITH IDIOPATHIC THROMBO-
CYTOPENIC PURPURA THAT REDUCES
THE NUMBER OF BLOOD
PLATELETS

CHARLES E. TROLAND, M.D.

AND

FERDINAND C. LEE, M.D.

BALTIMORE

The purpose of this article is to describe more fully an extract obtained from the spleen of patients suffering from idiopathic thrombocytopenic purpura which reduces the number of platelets in the circulating blood. A brief preliminary report has already been published.¹ All the material was obtained through the cooperation of Dr. Dean Lewis, who felt that it might be possible to make extracts of such a nature that the clinical picture of the disease could be reproduced experimentally.

MATERIAL AND METHOD

Chronologically, the first successful extract was made from the spleen of a patient, the essential points in whose case are as follows:

CASE 1.—M. O., a white woman, aged 22, was admitted to the Johns Hopkins Hospital on Jan. 25, 1937, because of rectal bleeding. The family history revealed no excessive bleeding or blood dyscrasia. She was first admitted to the hospital in 1933, at which time an appendectomy was performed. The operation and convalescence did not indicate a hemorrhagic tendency. The early history did not suggest any tendency to excessive bleeding. The menstrual history was normal, with each period lasting for three to four days and only moderate flow. In August 1936, during the fourth month of her first pregnancy, the patient noted spontaneous bleeding from the gums in small amounts. In November some small purpuric areas were noted on the abdomen, but they disappeared in two days. These purpuric spots continued to appear at weekly intervals throughout the remainder of the pregnancy. Blood studies showed normal cell counts. On December 18 a blood smear showed the number of platelets to be greatly reduced. A rectal examination in the Obstetrical Dispensary on Jan. 25, 1937, caused excessive bleeding, and the patient was admitted to the hospital. Two hundred cc. of blood and 0.6 cc. of snake venom were given on the day of admission and again on the following day. On January 27 she was delivered of a normal child, with hemorrhage estimated to be only 150 cc. Blood studies on the day of delivery showed platelets 78,000 and red cells 4,000,000 per cubic millimeter, hemoglobin content 12 Gm., bleeding time eight minutes and reaction to the tourniquet test positive. Some vaginal bleeding began on February 1 and continued for a month, during which time purpuric spots again appeared on the abdomen. On March 1 large clots of blood were passed, and this form of hemorrhage continued until April 8. From March 12 to March 19, three blood trans-

From the Surgical Hunterian Laboratory of the Johns Hopkins University School of Medicine.

1. Troland, C. E., and Lee, F. C.: A Preliminary Report on a Platelet-Reducing Substance in the Spleen of Thrombocytopenic Purpura, *Bull. Johns Hopkins Hosp.* 62: 85 (Jan.) 1938.

38. Reimann, cited by Pfahler, G. E.: The Treatment of Carcinoma of the Breast, *Am. J. Roentgenol.* 39: 1 (Jan.) 1938.

39. MacCarty, W. C.: Cytologic Diagnosis of Neoplasms, *J. A. M. A.* 81: 519 (Aug. 18) 1923.

fusions were given, as well as four injections of snake venom in doses varying from 0.6 to 1 cc. Bleeding did not stop. The platelet count remained around 36,000, and the hemoglobin content dropped from 12 to 5.8 Gm. On April 8 splenectomy was performed by Dr. Paul A. Kunkel. Vaginal bleeding ceased, and blood studies on April 20 showed the platelet count to be 280,000, bleeding time one and one-half minutes, red cells 4,170,000, clotting time nine minutes and clot retraction time one hour. The patient was discharged on April 22. Blood studies on May 12 showed the platelet count to be 112,000, bleeding time four minutes, clotting time seven minutes, clot retraction time forty-five minutes and hemoglobin content

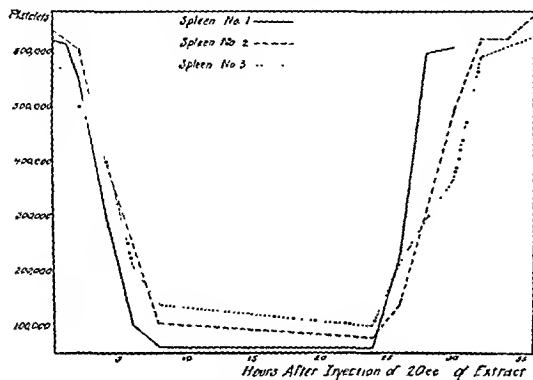


Chart 1.—The fall and subsequent rise to normal of the number of platelets in the circulating blood of a rabbit after the intravenous injection of 20 cc. of splenic extracts obtained from three patients with idiopathic thrombocytopenic purpura.

13 Gm. She was readmitted on May 25, complaining of pain in the right upper quadrant, which was diagnosed as due to acute cholecystitis. She was discharged on May 27. Since the splenectomy there has been no evidence of excessive bleeding.

The spleen weighed 120 Gm. and was smooth, soft and glistening. Microscopic examination revealed conspicuous malpighian bodies but only occasional germinal centers. The sinuses were partly filled with blood. There were no abnormal cells in the pulp, and there was little evidence of blood destruction.

The spleen was cut up and placed in five volumes of acetone. Dr. Arthur Grollman suggested that reagent acetone be used and not the commercial variety. The specimen was shaken occasionally from the time of removal on April 8 until June 4, when the acetone, which by that time was a light orange, was filtered off. Commercial acetone was put back on the ground-up spleen, primarily to preserve it but also with the idea of seeing whether this type of acetone could be used for extraction.

The filtered acetone from the first extraction was distilled off, leaving a brownish sediment on the walls and bottom of the balloon flask. One hundred cc. of distilled water was poured into the flask and shaken vigorously in order to take up as much as possible of the brown residue. The cloudy brown fluid was filtered through filter paper, and the small amount of fatty dark brown material remained on the paper. The filtrate was cloudy and orange-brown. It was put on the ice at once and never showed a precipitate.

Before any tests were made of the first extract, and therefore without its being known whether the acetone extract was of any value, the spleen from the second patient with thrombocytopenic purpura was received. The essential features of this patient's history are as follows:

CASE 2.—F. D., a white girl, aged 14 years, was first seen in the Harriet Lane Home of the Johns Hopkins Hospital in 1923, when 3 months of age. The family history revealed no

excessive bleeding or blood dyscrasia. A hard purple swelling had appeared on the right side of the face at the age of 6 weeks and had gradually grown to include the right ear and the right side of the neck. She was referred to the Howard A. Kelly Hospital, where radium treatments were given for one and a half years. The purple area disappeared completely. During the next seven years she had the usual childhood diseases, measles, pertussis and chickenpox. In 1930 a tonsillectomy and an adenoidectomy were performed without excessive bleeding. The menses first appeared in February 1936, with profuse bleeding, and coincidentally with their appearance the purple mass on the face and neck reappeared. Radium treatments were again resorted to, and the mass promptly disappeared. On October 19, five days before the onset of menstruation, the purple swelling reappeared, but it disappeared when menstruation began. This same phenomenon recurred in three week cycles, and during the period of greatest swelling there was some respiratory embarrassment, which became pronounced on December 30, and she was admitted to the hospital.

Examination showed the right side of the face and neck to be greatly swollen, and there were extensive hemorrhages into both eyelids and from the buccal mucous membranes. Difficulty in breathing was moderately severe but not enough to justify tracheotomy. Blood studies showed the platelet count to be 198,000 per cubic millimeter, the reaction to the tourniquet test positive, red cells 4,360,000 and hemoglobin content 13.8 Gm. Diagnoses of hemangiosarcoma of the face and thrombocytopenic purpura were made. The patient's condition gradually improved, and she was discharged on Feb. 12, 1937. She was readmitted on February 22, because of respiratory difficulties caused by the swelling of the right side of the face and neck. Blood studies showed the platelet count to be 128,000, but extravasation of blood around the venous puncture needle prevented further studies. She was discharged on March 7 but was again readmitted on March 19. Seven days after discharge she had received a blow on her ankle; a marked extravasation of blood promptly appeared. Her gums bled spontaneously. Blood studies on March 19 showed platelets 21,000 and red cells 4,680,000 per cubic millimeter, bleeding time thirty minutes, clotting time five minutes, clot retraction time twenty-four hours and reaction to the tourniquet test positive. Her condition improved and she was discharged on May 6.

On June 11 the patient was readmitted, with identical complaints. Splenectomy was performed by Dr. Barnes Woodhall on June 28. A small accessory spleen was found and removed.

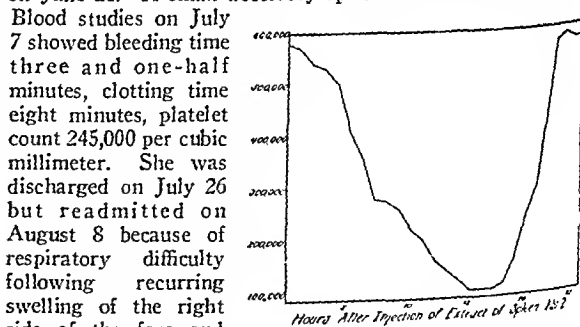


Chart 2.—The hourly change in the number of platelets in the circulating blood of a rabbit after the intravenous injection of 2 cc. of a splenic extract obtained from a patient with idiopathic thrombocytopenic purpura.

Blood studies on July 7 showed bleeding time three and one-half minutes, clotting time eight minutes, platelet count 245,000 per cubic millimeter. She was discharged on July 26 but readmitted on August 8 because of respiratory difficulty following recurring swelling of the right side of the face and neck. Her condition again improved, and she was discharged on August 23 after having been given two transfusions. On September 3 the swelling of the neck became pronounced and breathing difficult. On the following day there were epistaxis and progressive respiratory embarrassment. The patient died on September 4 after tracheotomy.

The spleen weighed 131 Gm. and was smooth and glistening. It was moderately tense on section. Microscopic examination showed marked fibrosis and a scarcity of cells in the pulp. Malpighian bodies were conspicuous, but only rarely were germinal centers seen. Numerous vessels showed hyaline changes, and there was a suggestion of the sickle cell trait. The accessory spleen showed marked hyaline changes in the vessels.

On the day of splenectomy, June 28, 1937, the spleen was ground up in a food chopper and, again empirically, placed in reagent acetone, as was the first spleen.

At this time no tests with the extract from the first spleen had been carried out, but extensive control platelet counts had been made in order to insure uniformity and reliability of the technic. The direct method of counting platelets was utilized throughout, the fluid of Rees and Ecker being used and the indirect blood smear method being employed for frequent checks on the direct counts.

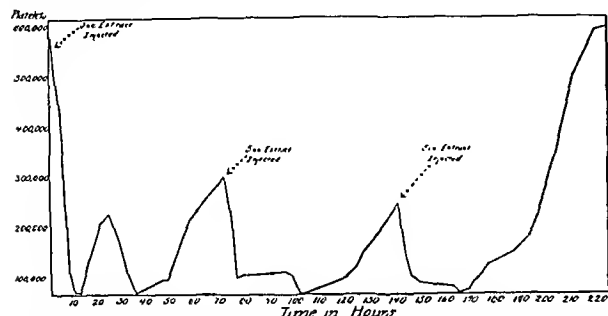


Chart 3.—The effect on the number of platelets in the circulating blood of a rabbit of repeated intravenous injections of a splenic extract obtained from a patient with idiopathic thrombocytopenic purpura.

On July 16 the first injections of the acetone extract from the spleen of patient 1 were made. A stock rabbit was used as the test animal, primarily because of simplicity and convenience. In all cases a new rabbit was used for each injection. After the normal control platelet count was made, 5 cc. of the first extract, known as S-1, was injected into the marginal vein of the ear of this rabbit, which weighed 2 Kg. When no untoward reaction occurred in five minutes, 15 cc. more of the same extract was injected into the same vein. The platelets steadily fell from their preinjection level of 620,000 per cubic millimeter to 58,000 in eight hours (chart 1). At this low level of platelets it was noted that bleeding was difficult to check when the ear was stuck. No purpuric spots, however, were noted at any time. The platelet count twenty-four hours after injection was 58,000 per cubic millimeter, but it rapidly rose in six hours to 610,000.

On July 27 an injection of 14 cc. of the same extract, S-1, was made into the marginal vein of the ear of a second rabbit, which weighed 2.2 Kg. The platelet count fell from the preinjection level of 612,000 per cubic millimeter to 96,000 in eight hours. The platelet count twenty-four hours after injection was 100,000 and rapidly rose to 605,000 in eight hours. It was again noted that bleeding was difficult to control when the platelet count was low, and again no purpuric areas were noted.

The commercial acetone that had been put on the spleen when the first reagent acetone was filtered off was now filtered and distilled, forming extract S-1-B. On September 14, 20 cc. of this extract was injected into a rabbit. The platelet count fell from 620,000 per cubic millimeter to 580,000 in six hours and rapidly rose to normal. This lack of potency might have been due to the use of commercial acetone instead of reagent acetone but was probably due to the fact that virtually all the platelet-reducing substance had been extracted by the first treatment with acetone.

The extract from the second spleen was prepared by a method identical with that used in the first case. The spleen was ground up in a food chopper imme-

diately after operative removal on June 28 and placed in reagent acetone. The acetone was distilled off on October 8, and 100 cc. of distilled water was added. This extract, S-2, also was always kept in the ice box.

On October 12, 20 cc. of this extract was injected into the marginal vein of the ear of a rabbit weighing 2.1 Kg. The platelet count fell from the preinjection level of 640,000 per cubic millimeter to 70,000 in twenty-four hours and rose to the preinjection level by the end of thirty-six hours (chart 1). In order to determine the minimal effective dose of the extract, 3 cc. was injected into a rabbit weighing 2.1 Kg. on October 18. The platelet count fell from a preinjection level of 640,000 to 80,000 in twenty-four hours and rose to normal in thirty-two hours (chart 2). A smaller dose had little effect on the platelet count.

On October 25, 5 cc. of the extract S-2 was injected into the marginal vein of the ear of a rabbit weighing 1.9 Kg. after control studies had shown the platelet count to be 580,000 per cubic millimeter, the red count 4,750,000, the white cell count 6,000 and the bleeding time two minutes. The platelet count fell to 70,000 in ten hours, but the red and white cell counts showed no appreciable change. The bleeding time, however, increased to four and one-half minutes. The platelet count was kept low for nine days, three additional injections of the extract being made when the count began to rise (chart 3). When the platelet count was low, around 70,000 per cubic millimeter, further studies showed the clotting time to be eight minutes and clot retraction not complete until twenty-four hours. The fragility of the red cells was within normal range.

In order to obtain further knowledge of the characteristics of the extract, 8 cc. was boiled for three minutes and then injected into a rabbit weighing 2 Kg. The platelet count fell from a preinjection level of 580,000 per cubic millimeter to 147,000 in twelve hours and rose again to normal in thirty-six hours. This test would seem to indicate that the substance producing thrombocytopenia is partly thermostable and would suggest in addition that its nature is possibly that of a protein.

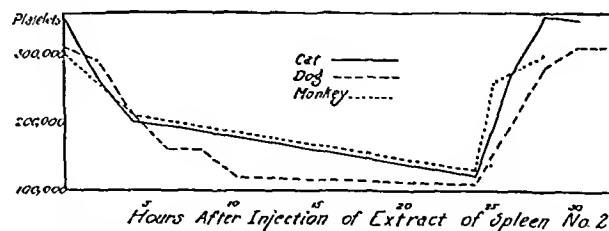


Chart 4.—The changes in the number of platelets in the circulating blood of a cat, a dog and a monkey after the intravenous injection of a splenic extract obtained from a patient with idiopathic thrombocytopenic purpura.

Since the rabbit had been the test animal so far, it was decided to check these results on other laboratory animals. Accordingly, on November 16, 5 cc. of the extract S-2 was injected into the left external jugular vein of a cat weighing 3.2 Kg. The platelet count fell from a control level of 350,000 per cubic millimeter to 120,000 in twenty-four hours and then rapidly rose to normal in six hours. On the same day 5 cc. of the extract was injected intravenously into a dog weighing 7.2 Kg. The platelet count fell from a preinjection level of 310,000 to 110,000 in twenty-four hours and rose again to normal in seven hours. On November 19, 10 cc. of the extract was injected intravenously into a

monkey weighing 8.8 Kg. The platelet count again fell from a control level of 300,000 per cubic millimeter to 120,000 in twenty-four hours and then returned to normal in five hours (chart 4).

On Jan. 25, 1938, 3 cc., which represented the last of extract S-2, was injected into a rabbit, and a platelet count was made at hourly intervals. The control count was 580,000; the lowest count was 100,000, at fourteen hours, and the normal level was attained in twenty-four hours (chart 4). The fact that the platelet count did not fall so rapidly and did not remain low for a longer time might well be explained by the age of the extract.

On Oct. 18, 1937, patient E. K. entered the hospital for splenectomy to be performed on the following day. One hour before he went to the operating room 20 cc. of his blood was taken and immediately injected into the aural vein of a rabbit, but there was no fall in the platelet count of the animal's blood. The animal was found dead at the end of eight hours.

CASE 3.—E. K., a white youth, aged 19, was admitted to the Johns Hopkins Hospital on Oct. 18, 1937, with the complaint of excessive bleeding. The family history showed no excessive bleeding or blood dyscrasia. He was first seen in the Harriet Lane Home in 1925, when 7 years old, suffering from nephritis following pneumonia. On Aug. 19, 1925, he complained of severe abdominal pain and vomited blood. A diagnosis of Henoch's purpura was made. On October 25 he was again seen because he had been bleeding for two weeks from a bruised finger. A blood smear showed virtually no platelets. When

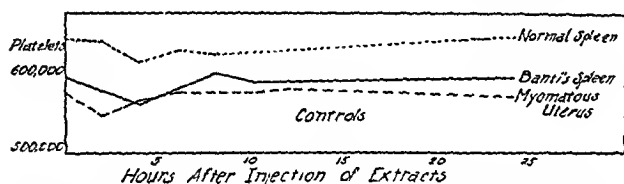


Chart 5.—The negligible changes in the number of platelets in the circulating blood of a rabbit after the intravenous injection of three representative control extracts.

6 years of age he bruised himself in a fall, and after that time he noted that he always bruised easily. Circumcision was performed when he was 13, with profuse hemorrhage for two days. On Nov. 7, 1935, he came to the hospital complaining of bleeding gums. Blood studies showed red cells 4,890,000 per cubic millimeter, hemoglobin content 15 Gm., bleeding time four minutes and clotting time eight minutes. The tourniquet test gave a positive reaction, and platelets were scarce. On July 8, 1936, he again returned to the dispensary complaining of bleeding gums. From July 14 to December 30 a series of fifteen injections of moccasin snake venom was given. During this period there was no spontaneous hemorrhage but the number of platelets remained low, from 22,000 to 70,000 per cubic millimeter, and the bleeding time remained about fifteen minutes. He began, however, to bruise easily again about Jan. 6, 1937, and seven roentgen treatments, directed primarily at the spleen, were given in three weeks, but to no avail. Blood studies on October 18 showed the platelet count to be 38,000 and the bleeding time to be ten minutes. A splenectomy was performed on October 19 by Dr. P. A. Kunkel, and blood studies on the following day showed the platelet count to be 84,600, bleeding time one and one-half minutes, clotting time four minutes and clot retraction time one hour. The platelets rose steadily to 810,000 by November 3. On November 5 the patient was admitted to the hospital with the complaint of pain in the left costovertebral angle, and a provisional diagnosis of an embolus to a radicle of the left renal artery was made. He was discharged asymptomatic on November 14. There was no return of bleeding, and on November 17 the platelets numbered 470,000.

The spleen weighed 127 Gm. and was small, smooth and glistening. Microscopic examination revealed a large number of splenic corpuscles, some of them having

germinal centers. Many sinuses were dilated. The pulp appeared normal, and there was no increase in cellular elements. The arterioles of the corpuscles were extremely sclerotic.

The extract from this spleen was prepared by a method identical with that in the two preceding cases. The spleen was ground up immediately after its surgical removal, on October 19, and put in 255 cc. of reagent acetone. The acetone was filtered and then distilled off on October 25, and 100 cc. of distilled water was added to the remaining extract. This extract also was always kept in the ice box, and it was known as S-3.

On October 27, after control counts had been made, 20 cc. of this extract was injected into the marginal vein of the ear of a rabbit weighing 2 Kg. The platelet count fell from 605,000 per cubic millimeter to 100,000 in twenty-four hours and then rose to 605,600 in an additional twenty-four hours. The red and white cell counts remained unchanged, but the bleeding time rose from a control of two and one-half minutes to four and one-half minutes when the platelets were at their lowest level. This extract seemed somewhat less potent than the two preceding extracts, as the injection of 5 cc. into a rabbit on November 22 caused a platelet drop from 600,000 only to 340,000 per cubic millimeter.

On November 25 an attempt was made to see whether massive doses of the extract would remove still more platelets from the blood; accordingly, 40 cc. of the extract was injected into a rabbit weighing 2.2 Kg. and having a platelet count of 602,000. The platelets, however, reached their lowest level at 100,000 per cubic millimeter, after six hours, and returned to normal values in thirty hours.

As soon as the first spleen extract showed an ability to reduce the number of platelets, control tissue was looked for, and curiously enough the most desirable tissue, a normal spleen, was the last specimen to be obtained. The experiences with the control series are chronologically arranged.

The first control extract was prepared from one lobe (weight 110 Gm.) of a thyroid gland removed for hyperthyroidism. The gland was removed on July 28, 1937, and was immediately ground up and put in acetone. The acetone was distilled off and distilled water added to the residue on August 20. On August 30, 20 cc. of the extract known as S-6 was injected into a rabbit weighing 2 Kg. The platelet count fell from 560,000 per cubic millimeter to 540,000, a change scarcely outside the range of experimental error.

The second control extract was prepared from a myomatous uterus weighing 500 Gm. The specimen was removed at operation on July 29, 1937, and the usual preparation was carried out, the acetone being distilled off on August 11. Twenty cc. of this extract, known as S-5, was injected into the vein of the ear of a rabbit weighing 2.2 Kg. on August 23. The platelet count fell from a preinjection level of 600,000 to 580,000 in four hours and had regained normal limits within another four hours (chart 5).

The third control extract was prepared from one half of the spleen removed from a patient having Banti's disease. The spleen was removed on October 19, prepared and put in acetone in the usual manner, and the acetone was distilled off on October 27. Twenty cc. of this extract injected into a rabbit on November 12 caused a fall in the platelet count from 580,000 per cubic millimeter to 550,000 in four hours, with a rise to 581,000 in an additional four hours (chart 5).

The fourth control extract was prepared from the spleen of a patient suffering from congenital hemolytic jaundice. The specimen was obtained at operation on July 27, 1937, and prepared by the usual method, the acetone being distilled off on October 19. The injection of 20 cc. of this extract into a rabbit on November 12 caused a fall in the platelet count from 588,000 to 570,000 per cubic millimeter in two hours, with a return to the preinjection level in six hours.

The fifth control extract was prepared from one half of the spleen of a patient who died of cardiac failure. The specimen, weighing 76 Gm., was obtained ten hours after death and was prepared in the usual manner. The spleen was obtained on Dec. 9, 1937, and the acetone distilled off on December 20. The injection of 20 cc. of this extract into a rabbit on December 27 caused a fall in the platelet count from 587,000 to 540,000 in four hours, with a rise to normal in eight hours.

The sixth control extract was prepared from a spleen removed because of a stab wound. The specimen was obtained at operation on March 5, 1938, and prepared in the routine manner. The acetone was distilled off on March 30. The injection of 20 cc. of this extract into a rabbit on April 12 caused a fall in the platelet count from 640,000 to 610,000 per cubic millimeter in four hours, with a return to the preinjection level in eight hours (chart 5).

COMMENT

Although extracts were made from only three spleens, the results were so uniform that it was felt justifiable to publish these observations before waiting for more material. The three cases were obviously of idiopathic thrombocytopenic purpura.

For the sake primarily of convenience it is suggested that the substance which has thus been found in the extracts of spleens taken from patients suffering from idiopathic thrombocytopenic purpura and which reduces markedly the number of platelets in the circulating blood of a rabbit after intravenous injection be called thrombocytopen, and this new term will therefore be used in the remainder of the article.

Simple as it was, the preparation of the extracts was nevertheless entirely empiric. Previous work in the preparation of intermedin from the hypophysis of cattle² showed that the acetone functioned primarily as a preservative and that the active principle was taken out by dilute acetic acid. In the case of the spleen, however, it was acetone that took out the substance that reduced the number of platelets. Whether it is essential to use reagent acetone rather than the commercial variety is open to question. It is probable that the commercial variety will prove to be satisfactory, but only parallel tests can establish this point. Furthermore, whether acetone and not alcohol, ether, water or dilute acetic acid is the best extracting substance remains to be determined.

The correct length of time to allow for the extraction of thrombocytopen by the acetone is still to be established. In the first case this period was sixty-seven days, in the second case one hundred and two days and in the third case six days. The third spleen gave the weakest extract, but it was from a patient who had received roentgen radiation over the splenic area. Thus, radiation brings in another unknown quantity.

Still another factor in the potency of the extracts is the weight of the spleen. Obviously, a large spleen

should yield more thrombocytopen than a smaller one. The weight of the three spleens, however, was so nearly the same that the difference in potency of the extracts from the second and third spleens cannot be explained on this basis.

It is possible that thrombocytopen may be found in other organs besides the spleen, and it is thus understandable why the spleen from some patients may not have as heavy a concentration of this substance as the spleen of others and why failures after splenectomy have occurred. The extrasplenic tissue which naturally suggests itself in this connection is the reticulo-endothelial system, for Kaznelson³ pointed out that the spleen is only a part of the reticulo-endothelial system, and other parts of this system might be primarily affected. Other possible explanations for failures after splenectomy are the presence of accessory spleens (Morrison, Lederer and Fradkin⁴) and the fact that many spleens are removed because of a mistaken diagnosis (Koster⁵).

The theory that the spleen in cases of thrombocytopenic purpura produces a toxin is not a new one. In 1915 Frank⁶ advanced the idea that this organ produces a noxious substance that causes thrombopenia by inhibition or destruction of the megakaryocytes of the bone marrow. This theory has been the most widely accepted one. Minot⁷ in 1917 modified it by suggesting that the deleterious agent can act on the circulating platelets, on the megakaryocytes or on the marrow as a whole. In spite of the relatively long time that this idea of a splenogenous toxin has been current, remarkably few attempts to isolate the toxin have been made. Torrioli and Puddu⁸ observed a substance in the spleen of patients with purpura that was toxic to tissue cultures of megakaryocytes. This substance was also seen in other organs and appeared to be related to the presence of reticulo-endothelial tissue in the organs. Attempts have been made more toward understanding purpura itself than toward isolating a cause of idiopathic thrombocytopenic purpura. The work with antiplatelet serum, as begun by Marino⁹ in 1905 and Cole¹⁰ in 1907 and more recently carried on by Tocantins,¹¹ Jones,¹² Lee and Robertson,¹³ Watabiki,¹⁴ Bedson¹⁵ and others has greatly advanced the knowledge of purpura itself.

The character of the curve in chart 1 and to a less extent of that in chart 3, showing a sharp fall in the number of platelets and then twenty-four hours later an even sharper rise, brings up the question as to the mode of action of thrombocytopen. More noteworthy

3. Kaznelson, P.: Thrombolytische Purpura, *Ztschr. f. klin. Med.* 87: 133, 1919.

4. Morrison, Maurice; Lederer, Max, and Fradkin, W. Z.: Accessory Spleens: Their Significance in Essential Thrombocytopenic Purpura Hemorrhagica, *Am. J. M. Sc.* 176: 672 (Nov.) 1928.

5. Koster, H.: Essential Thrombocytopenic Purpura, *M. J. & Rec.* 125: 23, 1927.

6. Frank, E.: Die essentielle Thrombopenie: I. Klinisches Bild, *Berlin. klin. Wchnschr.* 52: 454, 1915; II. Pathogenese, *ibid.* 52: 490, 1915.

7. Minot, G. R.: Diminished Blood Platelets and Marrow Insufficiency: A Classification and Differential Diagnosis of Purpura Haemorrhagica, Aplastic Anemia, and Allied Conditions, *Arch. Int. Med.* 19: 1062 (June) 1917.

8. Torrioli, M., and Puddu, V.: Studio sulla biologia di megacariociti sopravvissuti in vitro, *Policlinico* 41: 245 (May) 1934.

9. Marino, F.: Recherches sur les plaquettes du sang, *Compt. rend. Soc. de biol.* 58: 194, 1905.

10. Cole, R. L.: Note on the Production of an Agglutinating Serum for Blood Platelets, *Bull. Johns Hopkins Hosp.* 18: 261, 1907.

11. Tocantins, L. M.: Experimental Thrombopenic Purpura in the Dog, *Arch. Path.* 21: 69 (Jan.) 1936.

12. Jones, H. W., and Tocantins, L. M.: History of Purpura Haemorrhagica, *Ann. M. Hist.* 5: 349 (July) 1933.

13. Lee, R. L., and Robertson, C. H.: The Effect of Antiplatelet Serum on Blood Platelets and the Experimental Production of Purpura Haemorrhagica, *J. M. Research* 33: 323, 1916.

14. Watabiki, T.: Studies on Experimental Purpura Haemorrhagica Produced by Antiplatelet, *Kitasato Arch. Exper. Med.* 1: 195, 1917.

15. Bedson, S. P.: Blood Platelet Anti-Serum: Its Specificity and Role in the Experimental Production of Purpura, *J. Path. & Bact.* 24: 469 (Oct.) 1921; *Experimental Purpura*, *ibid.* 25: 94 (Jan.) 1922.

2. Lewis, Dean; Lee, F. C., and Astwood, E. B.: Some Observations on Intermedin, *Bull. Johns Hopkins Hosp.* 61: 198 (Sept.) 1937.

than the rapid fall in the number of platelets after the injection is the sudden, sharper return to normal, beginning at the end of twenty-four hours. This sharp rise was invariable and held true for all the experimental animals. The explanation for it may be found in the disappearance of thrombocytopen either because of destruction within the body or from excretion by the animal. It is probable that the substance may be passed out with the urine. Whether thrombocytopen acts directly on the platelets, on their generally accepted precursors, the megakaryocytes, or on bone marrow is yet to be determined.

As regards the chemical nature of thrombocytopen, we can say little at this time except to point out that sometimes a drug like allylisopropylacetylcarbamide, popularly known as sedormid, has been reported as causing a reduction in the number of platelets and producing purpura in some patients.^{15a}

One pertinent fact is that no hemorrhagic manifestations were noted in any of the animals in which marked thrombocytopenia had been produced. The possible reasons for this are many. Hemorrhage from the bowel or elsewhere internally might well have occurred and not been noted, as none of the animals were explored. Another probable explanation for the lack of purpura lies in the theory of purpura advanced by Bedson¹⁶ in 1922. He showed by the use of antiplatelet serums that thrombocytopenia alone will not cause purpura. According to his work, there must be some concomitant damage to the capillary walls to produce hemorrhage. These observations were supported by the clinical work of Brill and Rosenthal¹⁶ in 1923. It is therefore entirely possible that the experimental methods used in the work presented here extracted only a substance capable of producing thrombocytopenia. A substance toxic to capillary walls might have been left behind; or, indeed, it may be produced by some other organ. Further work with other methods of extraction might well aid students in reaching some conclusion on this point. Another possible but less probable explanation for the lack of purpura lies in the fact that the critical level of platelets for producing purpura in the rabbit is not known. The platelet levels obtained in this work might not have been low enough, or the low levels might not have been maintained for a sufficient length of time.

SUMMARY

Acetone extracts prepared from the spleen of three patients with idiopathic thrombocytopenic purpura caused a marked reduction in the number of platelets in the circulating blood when injected into laboratory animals. Extracts obtained in identical fashion from control tissue did not furnish this platelet-reducing substance, for which the name *thrombocytopen* is suggested.

The decrease in the number of platelets in the animal which received an injection was exceeded in promptness only by the sudden and rapid return to normal.

The platelet count could be held at a low level by repeated injections.

Boiling decreased the potency of *thrombocytopen*.

No evidence of purpura was noted in the experimental animals.

THE USE OF SULFANILAMIDE IN THE DIAGNOSIS AND TREATMENT OF BRUCELLOSIS

HENRY WELCH, PH.D.

JOHN A. WENTWORTH, M.D.

AND

FRIEND LEE MICKLE, Sc.D.

HARTFORD, CONN.

Chemotherapeutic effects of sulfanilamide and its derivatives in certain infectious diseases have been demonstrated in human beings and in experimental animals. Intensive studies have been carried out by Long and Bliss,¹ who in a recent article² gave an excellent bibliography of the investigations in this field.

In spite of beneficial effects in some infectious diseases the use of sulfanilamide and its derivatives should be carried out with caution, since an occasional idiosyncrasy toward these drugs does exist.³ On the other hand, the experimental studies in animals by Marshall and his associates⁴ and by Rosenthal⁵ indicate that the toxicity of sulfanilamide is small and, as pointed out by Marshall, that the drug is not contraindicated in cases in which definite therapeutic indications exist.

Bliss and Long⁶ have noted an increase in phagocytosis and a decrease in free cocci in the peritoneal exudates of mice experimentally infected with beta hemolytic streptococci. It is not possible to say whether the effect of sulfanilamide is primarily on the hemolytic streptococci or on the phagocytes. In experimental Welch bacillus peritonitis in mice, however, Bliss and Long have demonstrated that sulfanilamide inhibited the growth of these organisms in vivo. A bacteriostatic effect with sulfanilamide has previously been shown⁷ with *Clostridium welchii* in vitro. Reasoning by analogy, Long and Bliss feel that the action of sulfanilamide is the same on all susceptible bacteria.

For the past year we have studied the effect of sulfanilamide on the opsonic index in human beings and in animals. The method used for estimating the opsonocytaphagic power of the blood is the same as that described for undulant fever by Huddleson.⁷ The following degrees of opsonocytaphagic activity were recorded for each cell counted: negative, no organisms engulfed; slight, from one to twenty organisms engulfed;

From the Bureau of Laboratories of the Connecticut State Department of Health and the Hartford Hospital.

1. Long, P. H., and Bliss, Eleanor A.: Para-Aminobenzene Sulfonamide and Its Derivatives, *J. A. M. A.* **108**: 32 (Jan. 2) 1937; *Arch. Surg.* **34**: 35 (Feb.) 1937. Bliss, Eleanor A., and Long, P. H.: The Failure of Para-Aminobenzene Sulfonamide Therapy in Urinary Tract Infections Due to Group D (Lancefield) Beta Hemolytic Streptococci, *New England J. Med.* **217**: 18 (July 1) 1937. Long, P. H., and Bliss, Eleanor A.: The Use of Para-Aminobenzene Sulfonamide (Sulfanilamide) or Its Derivatives in the Treatment of Infections Due to Beta Hemolytic Streptococci, Pneumococci and Meningococci, *Southern M. J.* **30**: 473 (May) 1937.

2. Long, P. H., and Bliss, Eleanor A.: The Clinical Use of Sulfanilamide and Its Derivatives in the Treatment of Infectious Diseases, *Ann. Int. Med.* **11**: 575 (Oct.) 1937.

3. Harvey, A. M., and Janeway, C. A.: The Development of Arterial Hemolytic Anemia During the Administration of Sulfanilamide, *J. A. M. A.* **109**: 12 (July 3) 1937. Marshall, E. K., and Walz, E. M.: Cyanosis from Sulfanilamide, *Bull. Johns Hopkins Hosp.* **61**: 149 (Aug.) 1937. Menville, J. G., and Archinard, J. J.: Skin Eruptions in Patients Receiving Sulfanilamide, *J. A. M. A.* **109**: 1008 (Sept. 25) 1937. Newman, B. A., and Sharlit, Herman: Sulfanilamide: A Photosensitizer Agent of the Skin, *ibid.* **109**: 1036 (Sept. 25) 1937.

4. Marshall, E. K., Jr.; Cutting, W. E., and Emerson, Kendall, J.: The Toxicity of Sulfanilamide, *J. A. M. A.* **110**: 253 (Jan. 22) 1933.

5. Rosenthal, S. M.: Studies in Chemotherapy: II. Chemotherapy of Experimental Pneumococcus Infections, *Pub. Health Rep.* **52**: 48 (Jan. 8) 1937.

6. Bliss, Eleanor A., and Long, P. H.: Observations on the Mode of Action of Sulfanilamide, *J. A. M. A.* **109**: 1524 (Nov. 6) 1937.

7. Huddleson, I. F.; Johnson, H. W., and Hammon, E. E.: A Study of the Opsonocytaphagic Power of the Blood and Allergic Skin Reaction in Brucella Infection and Immunity in Man, *Am. J. Pub. Health* **23**: 917 (Sept.) 1933.

15a. Hoffman, Arthur M.; Kahn, Thrombocytopenic Purpura Following (Sedormid), *J. A. M. A.* **110**: 725. Thrombocytopenic Purpura Following Carbamide (Sedormid), *ibid.*, p. 726.
16. Brill, N. E., and Rosenthal, N.: Treatment by Splenectomy of Essential Thrombocytopenia (Purpura Haemorrhagica), *Arch. Int. Med.* **32**: 939 (Dec.) 1923; The Curative Treatment by Splenectomy of Chronic Thrombocytopenic Purpura, *Am. J. M. Sc.* **166**: 503 (Oct.) 1923.

moderate, from twenty-one to forty organisms engulfed; marked, over forty organisms engulfed.

In March 1937 we had an opportunity to determine the opsonocytophagic activity of a patient suspected of having brucellosis. A brief history is given:

CASE 1.—J. K., a woman aged 30, complained of generalized muscle pains, chills, fever, nausea and vomiting for two weeks. On physical examination the temperature was 103 F. and the pulse rate 104. The patient was slightly irrational. There were ecchymotic blotches over the extremities and hyperesthesia over the entire body. The course was acutely febrile for three weeks with leukocytosis. Toxic effects on the liver and kidneys were evidenced by bile, albumin three plus and casts in the urine. Agglutination tests for typhoid, paratyphoid and *Brucella* were negative March 22, 25 and 29. Sulfanilamide, 90 grains (6 Gm.), was given on March 26, 27 and 28 and then stopped. Opsonocytophagic activity on March 30 was 95 per cent marked phagocytosis. Opsonocytophagic activity one week later was

of the five cases reported three showed no agglutination with *Brucella* before sulfanilamide therapy but acquired agglutinins after this drug was administered. A fourth case presented a positive agglutination before the drug was given. In the fifth case no test for agglutinins was made after treatment.

CASE 2.—A. B., aged 33, seen Aug. 18, 1937, had vague complaints for three weeks with high fever and indefinite abdominal pain. On physical examination the temperature was 104.8 F., the pulse rate 92 and the respiratory rate 24. The throat was slightly injected, with no cervical glands; the liver and spleen were slightly palpable. The chest was clear on physical and x-ray examination. Agglutination tests for typhoid and undulant fever were negative. The urine and stools were normal. The Kahn reaction, the blood picture and the Widal reaction were all negative. Treatment consisted of sulfanilamide begun August 18 (90 grains a day for five days, increased to 120 grains [8 Gm.] for five days, then decreased to 60 grains [4 Gm.] for

TABLE 1.—*Experimental Opsonic Index**

Guinea Pig	Phagocytosis Before Injection				Phagocytosis Twenty Days After Injection				Phagocytosis Following Sulfanilamide Treatment Twenty-Three Days After Injection			
	Negative	Slight	Moderate	Marked	Negative	Slight	Moderate	Marked	Negative	Slight	Moderate	Marked
Effect of Sulfanilamide on Guinea Pigs Infected with <i>Brucella</i> Abortus												
148	96	4	0	0	6	32	28	34	0	0	0	100
68	100	0	0	0	6	35	34	22	0	0	10	90
123	96	4	0	0	22	36	26	16	0	0	0	100
202	96	4	0	0	46	18	26	10	0	0	0	100
6	100	0	0	0	6	40	36	18	0	0	4	96
45	94	6	0	0	8	68	16	8	Died before treatment			
Effect of Sulfanilamide on Uninfected Guinea Pigs												
Phagocytosis Before Treatment												
	Negative	Slight	Moderate	Marked	No organisms injected				Phagocytosis After Treatment†			
209	96	4	0	0					Negative	Slight	Moderate	Marked
225	96	4	0	0					100	0	0	0
226	100	0	0	0					88	2	0	0
237	92	8	0	0					100	0	0	0
									100	0	0	0
Untreated Guinea Pigs Infected with <i>Brucella</i> Abortus												
Phagocytosis Before Injection												
	Negative	Slight	Moderate	Marked	Phagocytosis Twenty Days After Injection				Phagocytosis Twenty-Three Days After Injection			
247	92	8	0	0	Negative	Slight	Moderate	Marked	Negative	Slight	Moderate	Marked
266	96	4	0	0	4	8	40	48	4	0	8	68
267	100	0	0	0	24	30	30	16	24	32	32	12
285	92	8	0	0	4	40	28	28	8	20	32	40
288	96	4	0	0	8	12	20	60	40	32	4	24
					8	40	28	24	16	8	24	52

* Huddleson method.

† Treatment 10 grains over a period of two days (5 grains a day). Index determined forty-eight hours after last injection of drug.

10 per cent marked phagocytosis. *Brucella* agglutination was found positive April 13. Opsonocytophagic activity April 13 was 58 per cent marked phagocytosis. April 13 the temperature was normal. The patient was released from the hospital April 22. There was no return of symptoms.

In view of Huddleson's classification of susceptible, infected and immune persons on the basis of their opsonocytophagic activity, an index of 95 per cent marked phagocytosis as shown by patient 1 while extremely ill was not expected. The index of 10 per cent marked phagocytosis demonstrated forty-eight hours after sulfanilamide therapy was stopped appeared to be more in line with the patient's condition.

It seemed desirable to determine in other cases of brucellosis the opsonocytophagic activity before and after sulfanilamide therapy. Brief histories of four such cases are given. A marked increase in phagocytic activity occurred following administration of sulfanilamide. Two cases showed an increase of from 8 to 80 per cent marked phagocytosis and from 0 to 92 per cent marked phagocytosis, and two cases showed an increase from 0 to 28 per cent and from 0 to 30 per cent marked phagocytosis. It is of interest to note that

three days). Opsonocytophagic activity August 18 was 47 per cent no phagocytosis, 50 per cent slight, 3 per cent moderate and 0 marked. Following sulfanilamide August 24 opsonocytophagic activity was 8 per cent no phagocytosis, 40 per cent slight, 22 per cent moderate and 30 per cent marked. Typhoid vaccine was given intravenously in three small doses August 20, 21 and 22. The patient's temperature fell to normal September 4 and except for two slight rises has remained normal. September 7 the opsonocytophagic activity was 0 negative, 8 per cent slight, 18 per cent moderate and 74 per cent marked phagocytosis.

CASE 3.—O. M. S., a man aged 55, complained of onset of fever Sept. 13, 1937, rising in one week to 104 F. The agglutination test for undulant fever was negative. The skin test was moderately positive. The opsonocytophagic index showed the patient to be in the infected group: 46 per cent no phagocytosis, 46 per cent slight, 8 per cent moderate, 0 marked. Agglutinations for typhoid and paratyphoid were negative. Physical examination was negative except for fever, low blood pressure and tenderness of the lower part of the legs. Sulfanilamide was started on the eleventh day (120 grains the first week). Opsonocytophagic activity one week after sulfanilamide therapy was started showed 92 per cent marked phagocytosis with 8 per cent moderate. Five days after sulfanilamide was stopped this dropped to 14 per cent marked

phagocytosis with no phagocytosis in 15 per cent. The agglutination test for *Brucella* was positive up to 1:320 on November 15. The temperature fell to normal on the second day of treatment and has remained there.

CASE 4.—M. S., a woman aged 66, with onset of fever Oct. 20, 1937, complained of drowsiness, fatigue, malaise for the preceding six weeks and afternoon temperature up to 100.6 F. for the past ten days. General physical examination and routine laboratory examinations were negative. The agglutination test for undulant fever was negative, but the cutaneous

days, malaise, chills and headache. Physical examination was negative except for the fever. Agglutination and cutaneous tests were both strongly positive June 15. Opsonocytophagic activity June 16 was 12 per cent no phagocytosis, 38 per cent slight, 44 per cent moderate and 6 per cent marked. Sulfanilamide was started (June 18) (only 60 grains was given). Therapeutic brucellin 0.1 mg. intracutaneously June 19 gave a severe reaction and was stopped. Opsonocytophagic activity June 22 was 20 per cent moderate and 80 per cent marked phagocytosis. Opsonocytophagic activity June 25 was 11 per cent no phago-

TABLE 2.—Further Experiments on Opsonic Index*

Guinea Pig	Phagocytosis Before Injection				Phagocytosis Ten Days After Injection				Phagocytosis Following Sulfanilamide Treatment Thirteen Days After Injection			
	Negative	Slight	Moderate	Marked	Negative	Slight	Moderate	Marked	Negative	Slight	Moderate	Marked
Effect of Sulfanilamide on Guinea Pigs Infected with <i>Brucella</i> Abortus												
152	100	0	0	0	100	0	0	0	0	0	0	100
156	100	0	0	0	68	20	8	4	0	4	0	96
159	100	0	0	0	40	28	12	20	0	0	5	95
160	100	0	0	0	64	32	0	4	0	0	0	100
162	100	0	0	0	100	0	0	0	0	0	0	100
309	100	0	0	0	100	0	0	0	0	0	0	100
338	100	0	0	0	100	0	0	0	0	0	0	100
189	100	0	0	0	36	56	8	0	0	8	0	92
383	100	0	0	0	100	0	0	0	0	0	0	100
392	100	0	0	0	84	16	0	0	0	0	0	100
					16	64	12	8	0	0	0	100
Effect of Sulfanilamide on Uninfected Guinea Pigs												
Phagocytosis Before Treatment												
	Negative	Slight	Moderate	Marked	No organisms injected				Phagocytosis After Treatment			
	Negative	Slight	Moderate	Marked					Negative	Slight	Moderate	Marked
341	100	0	0	0					100	0	0	0
356	100	0	0	0					100	0	0	0
363	100	0	0	0					100	0	0	0
274	100	0	0	0					100	0	0	0
Untreated Guinea Pigs Infected with <i>Brucella</i> Abortus												
Phagocytosis Before Injection				Phagocytosis Ten Days After Injection				Phagocytosis Thirteen Days After Injection				
	Negative	Slight	Moderate	Marked	Negative	Slight	Moderate	Marked	Negative	Slight	Moderate	Marked
157	96	4	0	0	56	44	0	0	Died			
161	100	0	0	0	8	72	12	8	Died			
347	100	0	0	0	20	40	20	20	Died			
359	100	0	0	0	72	28	0	0	20	36	8	36
360	100	0	0	0	100	0	0	0	Died			
376	100	0	0	0	8	8	40	44	Died			
402	100	0	0	0	8	20	44	28	12	8	36	44

* Huddleson method.

† Treatment 10 grains over a period of two days (5 grains a day). Index determined forty-eight hours after last injection of drug.

TABLE 3.—Effect of Serums and Cells of Infected, Treated Guinea Pigs on Heterologous Cells and Serums

Serum of Infected Treated Guinea Pigs	Cells of Normal Guinea Pigs: Marked Phagocytosis				Cells of Uninfected Treated Guinea Pigs: Marked Phagocytosis				Cells of Infected Treated Guinea Pigs	Serum of Normal Guinea Pigs: Marked Phagocytosis				Serum of Uninfected Treated Guinea Pigs: Marked Phagocytosis			
	301	312	318	319	200	225	226	237		301	312	318	319	300	225	226	237
148	100%	100%	100%	100%	100%	100%	100%	100%	148	0	0	0	0	0	0	0	0
68	100%	100%	100%	100%	100%	100%	100%	100%	68	0	0	0	0*	0	0	0	0
123	100%	100%	100%	100%	100%	100%	100%	100%	123	0	0	0	0	0	0	0	0
202	100%	60%	100%	100%	100%	96%	100%	94%	202	0	0	0	0	0	0	0	0
6	100%	100%	100%	100%	100%	100%	100%	100%	6	0	0	0	0*	0	0	0	0

* In these two counts 4 per cent of the cells showed moderate phagocytosis, but in no other instance was more than slight engulfment shown.

test was strongly positive. Opsonocytophagic activity November 5 was 100 per cent no phagocytosis. After an irregular fever for three weeks the patient was given sulfanilamide (300 grains in one week). Opsonocytophagic activity then showed 28 per cent marked and only 2 per cent no phagocytosis. The temperature, which had been normal after the first day of sulfanilamide, returned and another course of sulfanilamide was given (100 grains [6.5 Gm.] a day for five days). The opsonocytophagic activity was then found to be 28 per cent marked and 0 no phagocytosis. A second agglutination test was positive up to 1:160. The patient had fever altogether for approximately forty days with remissions during sulfanilamide therapy. She was given a total of 300 grains (20 Gm.) during the first course and 500 grains (32 Gm.) during the second. There has been no return of symptoms.

CASE 5.—F. B., a farmer aged 54, seen June 14, 1937, had many cows that had aborted. He complained of fever for nine

cytosis, 29 per cent slight, 40 per cent moderate and 20 per cent marked phagocytosis. The patient was discharged June 26 with a normal temperature.

To determine whether sulfanilamide therapy in other infections stimulates an increase in opsonocytophagic activity toward *Brucella*, five patients with gonorrhea and one patient with relapsing fever were each given a total of 300 grains (20 Gm.) of sulfanilamide over a period of five days. The opsonocytophagic activity was determined before and after administration of the drug. No appreciable change occurred in the opsonocytophagic activity toward *Brucella* after sulfanilamide therapy.

In the control gonorrhea group the opsonic activity of the blood of these patients was also tested again: *Neisseria gonorrhoeae*, *Monilia candida*, *staphylococci*, *Eberthella typhosa*, *Escherichia coli*, *pneumococci* type

I, III and VIII and, in some instances, beta hemolytic streptococci. A definite increase in opsonic activity was demonstrated for both hemolytic streptococci and staphylococci but no appreciable change could be shown with any of the other organisms listed.

ANIMAL EXPERIMENTS

Eleven guinea pigs were injected each with 100 million live *Brucella abortus* organisms suspended in

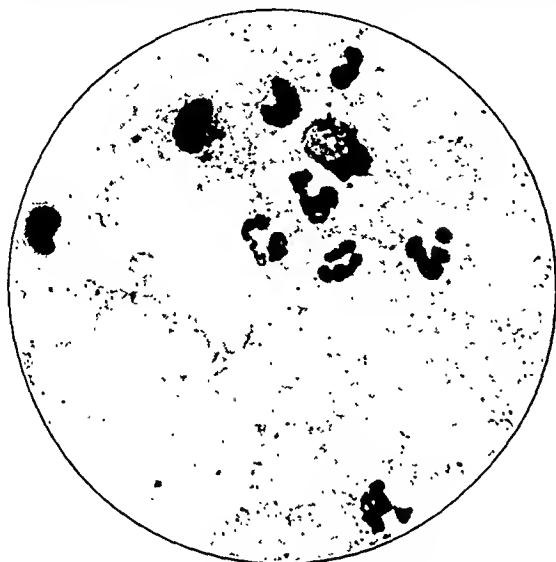


Fig. 1 (guinea pig 162).—Opsonocytophagic index before sulfanilamide treatment.

saline solution. On the twentieth day after injection an opsonocytophagic index was determined on each animal and on four normal controls. Six of the infected guinea pigs and the four normal guinea pigs were then injected subcutaneously with 5 grains (0.3 Gm.) of sulfanilamide suspended in olive oil. Twenty-four hours later a similar injection was made (total 10 grains [0.6 Gm.]). Forty-eight hours after the last injection of sulfanilamide opsonocytophagic tests were made on all guinea pigs comprising five⁸ infected treated, four uninfected treated and five infected untreated. The results are given in table 1.

All the infected animals treated with sulfanilamide showed marked increases in phagocytic activity. The average percentage of cells showing marked phagocytosis before treatment was 20 per cent and after treatment 97 per cent.

In the infected untreated group of animals the average percentage of cells showing marked phagocytosis on the twentieth day after injection was 35 and on the twenty-third day only 43. The uninfected treated guinea pigs showed no change in phagocytic activity.

An average increase in opsonic activity from 20 to 97 per cent of marked phagocytosis in *Brucella* infected guinea pigs following treatment with sulfanilamide is a significant one. It was felt, however, that an even greater difference might be demonstrated if sulfanilamide therapy was started earlier in the process of infection.

A series of seventeen guinea pigs was injected intraperitoneally with *Brucella abortus* in a dose of 100 million. Ten days after injection an opsonic index for *Brucella* was done on each animal and 5 grains of sulf-

anilamide in olive oil was injected subcutaneously into ten of the infected guinea pigs, seven being withheld as untreated controls. Four normal guinea pigs were each given 5 grains of sulfanilamide at the same time the infected animals were treated. On the following day a further dose of 5 grains of sulfanilamide in olive oil was injected subcutaneously into both the infected and the uninfected group. Forty-eight hours later a second opsonic index was determined on all guinea pigs. The results obtained are shown in table 2.

The change in the degree of phagocytosis in infected guinea pigs following treatment with sulfanilamide was even greater than in the first series (table 1). Four guinea pigs in the infected treated group (152, 162, 309 and 189, table 2) which had shown 100 per cent negative phagocytosis before treatment with sulfanilamide showed 100 per cent marked phagocytosis after treatment.

Figures 1 and 2 are reproductions of photomicrographs of typical fields observed (guinea pig 162) before and after treatment with sulfanilamide. Figure 3 shows the opsonocytophagic activity of the blood of guinea pig 309 after treatment with sulfanilamide. Before sulfanilamide treatment the leukocytes show no engulfment and the *Brucella* organisms are evenly distributed throughout the field. After treatment not only is there marked engulfment but there appears to be a positive chemotaxis of the organisms for the white cells. This phenomenon has been noted throughout these studies with *Brucella* organisms.

Five guinea pigs in the control (infected untreated) group died between the tenth and the thirteenth day of the experiment (table 2). In the treated uninfected group no change in opsonic index was observed.

In order to determine whether sulfanilamide was present in the blood of infected guinea pigs at the

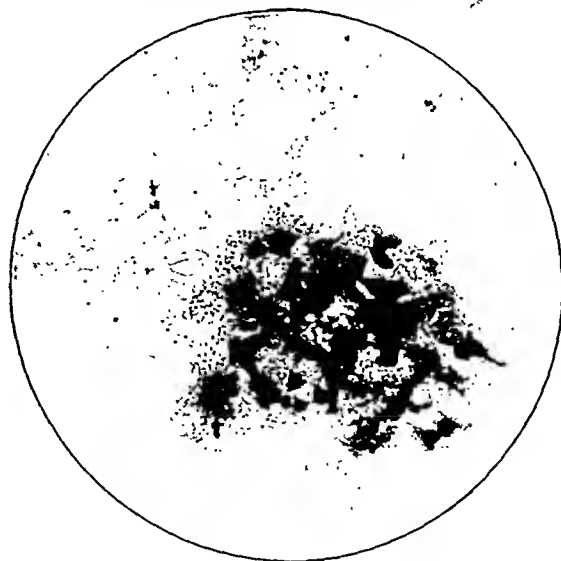


Fig. 2 (guinea pig 162).—Opsonocytophagic index after sulfanilamide treatment.

time that marked phagocytic activity was demonstrated, the blood serums of all treated animals were tested for sulfanilamide. In the first group tested (table 1) none of the infected treated animals showed sulfanilamide in their blood serum, while those which were not infected but treated simultaneously with the same amount of sulfanilamide as the test group all showed

8. One infected animal in this group died before treatment.

some sulfanilamide present. In the second series the results were not as uniform although of the ten infected treated animals seven showed no sulfanilamide in their blood while in the control group of four animals two showed sulfanilamide in the blood.

Since serums from the first group of guinea pigs (table 1) showed no sulfanilamide and the blood of these animals was extremely active against *Brucella* organisms, it seemed advisable to determine whether the cells or the serum of such infected treated animals was the active agent in bringing about marked phagocytosis. Accordingly, in all five guinea pigs of the infected treated group (table 1) blood was withdrawn from the heart into citrate solution (final concentration 0.78 per cent) and the serum removed by centrifugation. The cells were washed twice with salt solution (0.85 per cent).

Opsonocytophagic tests were then done after serums of infected treated guinea pigs were combined with the cells of normal guinea pigs and with the cells of uninfected treated guinea pigs. Tests were also made

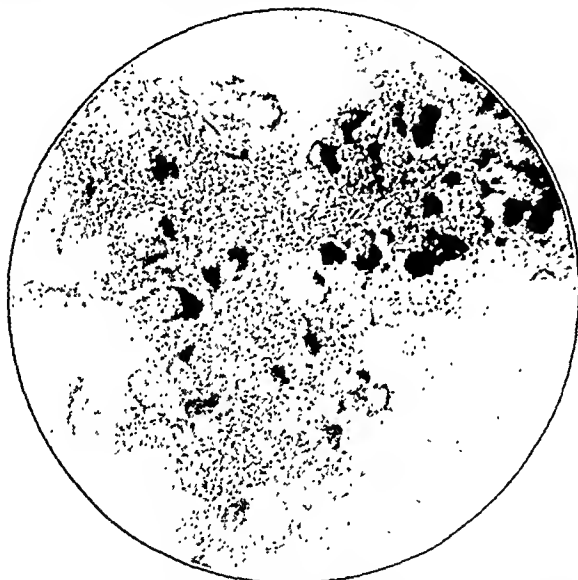


Fig. 3 (guinea pig 309).—Opsonocytophagic index after sulfanilamide treatment.

with the cells of the infected treated guinea pigs suspended in the serums of normal guinea pigs and with these cells in the serums of uninfected treated guinea pigs. In each case 0.1 cc. of cells, 0.1 cc. of serum and 0.1 cc. of a *Brucella abortus* suspension were mixed in agglutination tubes and incubated in the water bath at 37 C. for one-half hour. Blood smears were made in the usual way and stained with Hastings' stain and the degrees of phagocytic activity determined. The results obtained are given in table 3.

The serum of an infected treated guinea pig is capable of stimulating the cells of both normal guinea pigs and of treated uninfected guinea pigs to the same degree of phagocytosis that it stimulated its homologous cells. When normal human cells were suspended in serums of infected treated guinea pigs a similar stimulation of phagocytosis occurred. On the other hand the cells of infected treated pigs in the presence of normal serum or serum from treated uninfected guinea pigs completely lost their phagocytic activity.

An attempt was made to sensitize cultures of *Brucella* by treatment with sulfanilamide in vitro. Cultures so

treated were not engulfed by either normal human or normal guinea pig cells. Conversely, treatment of normal guinea pig or normal human blood in vitro failed to increase opsonic activity against untreated *Brucella* or against *Brucella* treated as described.

These results show that the activity evidenced in the serums of sulfanilamide-treated infected guinea pigs, but not in the leukocytes, is not the result of the presence of free sulfanilamide. These studies, however, suggest that the activity results in a stimulation of opsonins as the direct or indirect effect of the treatment on the infected animal.

To determine the specificity of the active agent, the blood of guinea pigs infected with *Brucella* and of patients with brucellosis has been tested against other organisms. Guinea pigs infected with *Brucella* and treated with sulfanilamide show a marked increase in opsonic activity for *Brucella*, but only slight changes in opsonocytophagic power could be demonstrated for *Shigella paradysenteriae* Sonne and Harris, *Shigella alcalescens* and *Eberthella typhosa*.

The blood of patients with brucellosis, although showing marked opsonocytophagic activity against *Brucella* following sulfanilamide therapy, showed no appreciable change in opsonic activity against *E. typhosa*, *Salmonella schottmülleri*, *Shigella alcalescens*, *Monilia*, *Salmonella supestifer* or *Escherichia coli*. However, a marked increase in phagocytic activity was shown with hemolytic streptococci and staphylococci.

It should be stressed that both normal persons and normal guinea pigs treated with sulfanilamide show no increase in their opsonocytophagic activity for *Brucella* or for any of the other organisms tested, with the exception of the activity in human beings for hemolytic streptococci and staphylococci.

COMMENT

It has been estimated that from 5 to 15 per cent of true cases of undulant fever fail to show agglutinins. In our experience the intracutaneous test may be positive in uninfected persons and the opsonocytophagic test may show a positive result in uninfected persons and, vice versa, absence of phagocytic activity in infected persons.

The investigations by Baumgartner, Robinson and Evans⁹ of the opsonocytophagic test as a means of determining *Brucella* infection indicate that it may be difficult to interpret even when both the cutaneous reaction and results of agglutination are known. Our studies indicate that in persons infected with *Brucella* the use of sulfanilamide therapy markedly stimulates the phagocytic activity of the white blood cells for *Brucella*. Since sulfanilamide-treated normal persons and persons with other infections show no change in opsonocytophagic activity for *Brucella* organisms, it appears that the use of this drug in suspected cases of brucellosis should be a helpful diagnostic procedure. The results obtained in infected sulfanilamide-treated guinea pigs were similar to those demonstrated in human beings. Berger and Schnetz¹⁰ recently reported the successful treatment in a case of undulant fever with prontosil. Our results in a series of five cases of brucellosis indicate that sulfanilamide may be a valuable therapeutic aid in the treatment of this disease.

9. Baumgartner, L.; Robinson, F., and Evans, A.: An Evaluation of the Opsonocytophagic Activity Test in the Diagnosis of *Brucella* Infections, reported at the American Public Health Association Meeting, New York in October 1937.
10. Berger, W., and Schnetz, H.: Success of Treatment with Prontosil in a Case of Bang's Disease, *Med. Klin.* 33: 594 (April 30) 1937.

The investigations of Long and Bliss indicate that sulfanilamide acts *in vivo* by bringing about a change in the susceptible micro-organisms which permits phagocytosis. In a recent article Osgood and Brownlee¹¹ note that the major action of sulfanilamide on beta hemolytic streptococci seems to be neutralization of the toxins and that the drug has no direct effect on phagocytosis. The latter authors used *in vitro* experiments with cultures of human marrow to support their contentions, whereas Long and Bliss came to their conclusions following *in vivo* experiments in mice.

Our studies show that in cases of human brucellosis and in guinea pigs infected with *Brucella abortus*, treatment with sulfanilamide markedly increases phagocytosis. Individuals infected with other diseases and normal guinea pigs treated with sulfanilamide show no change in their opsonocytophagic activity for *Brucella abortus*. Further, the blood of normal human beings or normal guinea pigs, even when treated *in vitro* with sulfanilamide, shows no change in opsonocytophagic activity when mixed with untreated *Brucella abortus* or with sulfanilamide-treated organisms.

It has been possible in infected guinea pigs treated with sulfanilamide to demonstrate absence of the drug in the blood at the time at which marked phagocytosis occurs and, further, to transfer this marked phagocytic activity to normal guinea pig and human cells by suspending them in the serum of infected treated guinea pigs. Since the presence of sulfanilamide as such is not essential for the demonstration of marked phagocytosis in infected treated guinea pigs, it would appear that the effect of the drug is an indirect one. Osgood and Brownlee's demonstration of destruction of the erythroxin of beta hemolytic streptococci with sulfanilamide would indicate that at least with this organism one of the mechanisms of its action is the destruction of such exotoxins. On the other hand, with *Brucella abortus*, which produces no exotoxin, some other explanation for the action of the drug on this organism is necessary. It is well known that *Brucella* filtrates are extremely toxic and produce in infected and sensitized individuals marked reaction when injected intracutaneously in small amounts. The toxicity of such filtrates are manifested not only by local reactions but also by definite systemic reactions such as malaise, high fever and headache. It appears to us that sulfanilamide acts indirectly in *Brucella* infections by increasing the opsonic power of the blood and thus neutralizing the effect of the endotoxin or aggressin-like substances produced by this organism allowing phagocytosis to take place. The fact that it was not possible to stimulate the opsonic power of the blood toward *Brucella* of uninfected human beings or guinea pigs by treatment with sulfanilamide would indicate that an infective or immunizing process must be in progress for the drug to stimulate phagocytosis in this disease. However, an active infective process with beta hemolytic streptococci or staphylococci does not appear to be necessary for the drug to stimulate phagocytosis of these organisms. In normal or in infected human beings treated with sulfanilamide the opsonocytophagic power of the blood was increased markedly for the latter organisms. An explanation of the phagocytic activity induced by sulfanilamide therapy in human beings against beta hemolytic streptococci and staphylococci may lie in the wide distribution of these organ-

isms with correspondingly increased chances for previous infection or for partial immunization by subinfective doses. Experimental studies of this phase of the problem in animals are now in progress.

CONCLUSIONS

The use of sulfanilamide would appear to be a valuable aid in the diagnosis and treatment of human brucellosis.

Animal experimentation indicates that in *Brucella* infections sulfanilamide markedly increases opsonocytophagic activity for *Brucella* organisms.

In *Brucella* infections sulfanilamide appears to act through stimulation of the defense mechanism of infected animals by increasing the production of specific opsonins, thus affecting neutralization of the endotoxin or aggressin-like substances produced by these organisms, with resulting phagocytosis.

50 Farmington Avenue.

THE LATERAL PYELOGRAM AS A DIAGNOSTIC AID IN PERI- NEPHRIC ABSCESS

JOHN G. MENVILLE, M.D.

NEW ORLEANS

Perinephric abscess is an age old condition recognized as a clinical entity for many years, yet it remains undiagnosed in a large percentage of cases. In diagnosis this condition may be confused with traumatic rupture of the kidney, pyonephrosis, nephrolithiasis, renal or perirenal tumors, lumbar arthritis, lumbar hernia, retrocecal appendicitis, subdiaphragmatic abscess, gall-bladder disease, tuberculosis of the spine or hip, osteomyelitis of the ribs or a ruptured viscus. Consequently, any patient with a history of chills, fever or lumbar pain and presenting tenderness of the costomuscular angle, leukocytosis and rigidity of the lumbar and psoas muscles should undergo a complete urologic examination.

In 1921 Bela Alexander¹ of Leipzig reported two cases of perinephric abscess showing a disappearance of the psoas line and a poorly defined kidney outline on the affected side; in one of the cases there was a curvature of the spine and a retraction of the thigh. In 1928 Beer² and Lipsett³ independently and simultaneously brought out and stressed these signs in the diagnosis of perinephric abscess. In 1929 Peacock⁴ stressed the fact that a retrorenal or a retroperitoneal mass producing an anterior and a lateral displacement of the kidney and ureter could be demonstrated by stereoscopic roentgenograms. In his opinion, lateral roentgenograms would show the same displacement, but such a procedure offered too many difficulties. In 1934 Mertz and Hamer⁵ demonstrated the value of lateral pyelograms in urologic diagnosis, but in their series they made no mention of nor did they demon-

From the Division of Urology, Department of Surgery, Tulane University of Louisiana School of Medicine.

1. Alexander, Bela, quoted by Peacock.⁴

2. Beer, Edwin: Roentgenographic Evidence of Perinephric Abscess, *J. A. M. A.* 90: 1375 (April 28) 1928.

3. Lipsett, P. J.: Roentgen Ray Observations in Acute Perinephric Abscess, *J. A. M. A.* 90: 1374 (April 28) 1928.

4. Peacock, A. H.: Perinephric Abscess, *Surg., Gynec. & Obst.* 47: 757-765 (June) 1929.

5. Mertz, H. O., and Hamer, H. G.: The Lateral Pyelogram: An Investigation of Its Value in Urologic Diagnosis, *J. Urol.* 31: 23-54 (Jan.) 1934.

11. Osgood, E. E., and Brownlee, Inez E.: Culture of Human Marrow: Studies on the Mode of Action of Sulfanilamide, *J. A. M. A.* 110: 349 (Jan. 29) 1938.

strate a perinephric abscess. Cabot⁶ stresses the importance of the limitation of movement of the inner portion of the diaphragm in large perinephric abscesses.

Failure to recognize the condition or to institute proper and early treatment is probably the explanation of the high mortality rates reported in the literature; therefore, any diagnostic procedure which facilitates an accurate diagnosis will help to lower these rates.

REPORT OF CASES

In four cases in which perinephric abscess was clinically suspected lateral pyelograms were made, and in the advanced cases the corresponding kidney and ureter were found to be markedly displaced anteriorly. Although lateral pyelograms have been used elsewhere in the diagnosis of various renal and retroperitoneal lesions, I⁷ am unable to find any reference of this procedure being used in perinephric abscess except in my preliminary report in 1937.

CASE 1.—A white youth aged 19 suffered from pain in the left lumbar region and from occasional chills and fever for fourteen months. Furuncles about the face appeared shortly after the onset of pain. Examination revealed that the patient was emaciated, with a limping gait, a slight curvature of the spine and a tendency to elevate the left thigh. There was pain on extension of the left thigh, rigidity of the left lumbar muscles, a deep-seated, firm, slightly tender mass in the region of the left kidney, a mild leukocytosis and a temperature of 99 F. The blood chemistry, the urine from the bladder and from each kidney, and the function of each kidney were normal.

A roentgenogram of the kidneys, ureters and bladder showed a curvature of the lumbar spine, with the concavity pointing to the left side and an obliteration of the shadow of the left psoas muscle. A left retrograde pyelogram, with anteroposterior and lateral views, showed an enlarged kidney with a compression of the upper calix and a marked anterior displacement of the kidney and ureter (fig. 1). Oct. 29, 1936, a left-sided perinephric



Fig. 1 (case 1).—A, a preoperative retrograde pyelogram of a patient with a perinephric abscess, showing the enlarged left kidney, with a slight blunting of the lower calices and a compression of the upper calix. The spine shows a curvature, with the concavity pointing to the left side. B, a lateral pyelogram showing the kidney and ureter displaced anteriorly in a smooth, regular, arclike manner.

abscess of *Staphylococcus albus* origin, containing approximately 1,500 cc. of thick purulent material, was drained. Four months after operation the patient returned for an examination at my request. A retrograde pyelogram with anteroposterior and lat-

eral views showed the pelvis and calices to be normal and the kidney and ureter to be in normal positions (fig. 2).

CASE 2.—A white man aged 27 suffered from pain in the right lumbar region and from chills and high fever for four months. There was a loss of 15 pounds (6.8 Kg.) and a limping gait increased frequency and nocturia. On examination the patient was weak and emaciated and had a temperature of 103 F., tenderness over both lumbar regions, a tender movable mass in t-

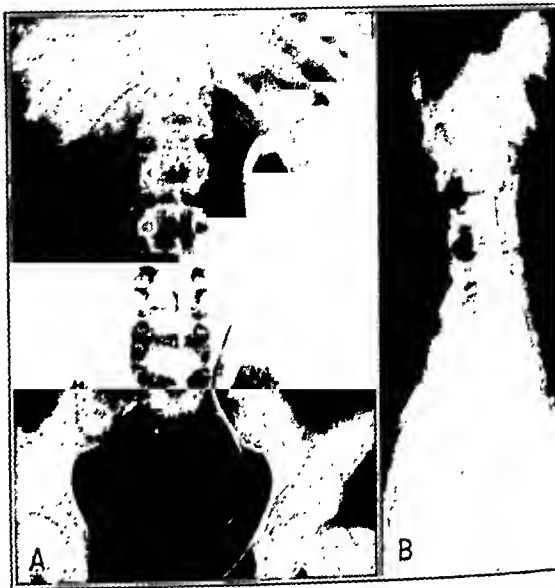


Fig. 2 (case 1).—A, a retrograde pyelogram made four months after operation, showing the pelvis and calices to have returned to their normal size and shape. The spine has also returned to a normal straight line. (Compare with figure 1 A.) B, a lateral pyelogram made four months after operation, showing the kidney and ureter to be in normal position. (Compare with figure 1 B.)

right side, rigidity of the muscles of the right lumbar region and a slight flexion of the right thigh. A roentgenogram of the abdomen revealed a slight curvature of the lumbar spine, with the concavity pointing to the right side and an obliteration of the shadow of the right psoas muscle. A right-sided retrograde pyelogram revealed an overdistended pelvis with some pyelovenous backflow. A lateral view showed the kidney and ureter to be displaced anteriorly in a smooth, arclike manner.

April 12, 1937, a large right-sided perinephric abscess was drained. Twenty-one days later a right-sided retrograde pyelogram in the anteroposterior and lateral views revealed the kidney to be of normal size and in a normal position.

CASE 3.—A white man aged 33 suffered from cramping pains in the right side of the abdomen for seven days and in the right kidney for two days. A year previously an appendical abscess had been drained. Examination revealed spasticity of the right lumbar muscles with tenderness in that region and pain on extension of the right thigh. The urine was essentially normal. A leukocyte count of 12,350 was found. The urine specimen from each kidney as well as the function of each kidney was normal. A roentgenogram of the abdomen was obscured by gas shadows. Retrograde pyelograms in the anteroposterior position revealed an enlarged left kidney, low in position, and a right kidney with an incomplete filling of the lower calix. A lateral view showed the right kidney and ureter to be displaced anteriorly in a smooth, regular, arclike manner.

April 12, 1937, a large right-sided perinephric abscess of *Bacillus coli* origin was drained. Seventeen days later a right retrograde lateral pyelogram showed the kidney to be in a normal position, but the lower end of the ureter was still somewhat displaced anteriorly. This deformity was probably due to adhesions from the old appendical abscess.

CASE 4.—A white boy aged 4 years suffered from nausea and vomiting six days prior to admission. Following a purgative, pain developed in the lower right quadrant radiating to the right thigh and to the costal margins posteriorly. Examination revealed that the child was moderately ill, with a temperature

6. Cabot, Hugh: Blood Stream Infection of the Kidney. *Brit. J. Urol.* 8: 233 (Sept.) 1936; Review of the Sixth Congress of the International Society of Urologists, *Surg.* 1: 147 (Jan.) 1937.
7. Menville, J. G.: Lateral Pyelogram as an Aid in the Diagnosis of Perinephric Abscess: Preliminary Report. *New Orleans M. & S. J.* 90: 37 (July) 1937.

of 102 F., a marked tenderness in the right lumbar region and in the abdomen to the right of the umbilicus. The urine from the bladder and from each kidney was normal. Retrograde pyelograms revealed that the pelves and calices were normal. A lateral view of the right pyelogram showed that the kidney and ureter were displaced only slightly anteriorly and had no arclike curves. June 10, 1937, the kidney was explored and the lower pole was found to be inflamed, indurated and adhering to the retroperitoneum. About 3 cc. of purulent material was drained from the wound. A generalized peritonitis developed and the patient died eleven days after operation.

COMMENT

In the first case presented in this paper a lateral pyelogram was attempted in an effort to verify the diagnosis of perinephric abscess. The technic of having the patient lie on the affected side, perpendicular to the x-ray film, while the pyelogram was made, was so simple and so successful that the same procedure was carried out in the subsequent cases. However, the accuracy of a lateral pyelogram is dependent on the patient's lying perpendicular to the film, for if the side of the patient away from the film is tilted back the kidney nearest the film will normally cast a shadow anterior to the vertebral column.

The anterior displacement of the kidney and ureter in a smooth, regular, elongated arclike manner in patients with a large perinephric abscess is produced by the retroperitoneal accumulation of purulent material. A similar displacement by other forms of fluid is possible; I have seen such a condition following the extravasation of urine from a traumatic rupture of the kidney. Blood and chyle should act in a similar manner. In the absence of free fluid in the retroperitoneal space, I know of no condition that will produce a smooth anterior arclike deformity of the kidney and ureter with the exception of an aneurysm of the abdominal aorta.

In early cases of perinephric abscess in which only a few cubic centimeters of purulent material has accumulated, the displacement of the kidney and ureter may be so slight as to be scarcely noticeable. However, if there is sufficient infection to produce edema of the surrounding tissue, the kidney and possibly the ureter will be displaced anteriorly but not in an arclike fashion. The lateral pyelogram produces a typical deformity in advanced cases of perinephric abscess, while in the early cases the displacement is slight. Any displacement of the kidney anteriorly is suggestive of retroperitoneal disorder.

CONCLUSION

Lateral pyelograms in three cases of perinephric abscess presented a uniform, anterior, arclike displacement of the kidney and ureter on the affected side. Postoperative lateral pyelograms in the same cases showed the kidneys and ureters to be in normal positions with no evidence of anterior displacement. A lateral pyelogram in a very early case of perinephric abscess showed a minute anterior displacement of the kidney and ureter.

Maison Blanche Building.

Soil as Important as Seed.—But today we can recognize that bacteriology has not brought us all the gifts we anticipated. For it overlooked for a time that the soil was an important factor in infection as well as the seed. There is not only the microbe which invades the individual but there is the reaction of that individual to the microbe to be considered.—Langdon-Brown, Walter: *The Dead Hand in Medical Science*, *Lancet* 1:278 (Jan. 29) 1938.

FIBROUS AND FATTY REPLACEMENT OF RENAL PARENCHYMA

LOUIS J. ROTH, M.D.

AND

HORACE B. DAVIDSON, M.D.

COLUMBUS, OHIO

Replacement of renal parenchyma by fatty tissue has been until recently regarded as a rare condition, as a specific type of process resulting from infection and as limited almost entirely to the so-called surgical diseases of the kidney. Mention of this disease in the literature has been infrequent, and the confusion as to its cause is indicated by the profusion of titles given it. These include fatty transformation of the kidney, fatty degeneration of the kidney, lipomatosis renis, substitutio renis adiposa, lipomatous paranephritis, lipoma-



Fig. 1 (case 1).—Nephrolithiasis, grade 4 replacement; sudan IV.

tous nephritis, lipome intranephritic and degeneration lipoma. The main purpose of this paper is at once to clarify, simplify and enlarge the concept of this particular entity.

In the early literature replacement lipomatosis was at times confused with true lipoma of the kidney, a condition which is quite rare. Elansky¹ quoted Lubarsch as saying that in 40,000 autopsies only one lipoma was observed in the kidney. Moreover, a true lipoma of the kidney is usually small, encapsulated, located directly beneath the capsule of the kidney and surrounded by normal renal tissue. Replacement lipomatosis is not found in a normal kidney, being an invasive proliferation of fat extending from the hilus and the pelvis toward the periphery of the kidney as a replacement process supplanting destroyed or atrophied parenchyma.

From the Departments of Urology and Pathology of St. Francis Hospital and the Ohio State University College of Medicine.

Dr. W. N. Taylor, head of the Department of Urology of the Ohio State University College of Medicine, allowed us to include two of his cases in this report.

1. Elansky, N. N.: *Lipomatosis Perirenalis cum Atrophia et Substitutione Adiposa Renis*, *Ztschr. f. urol. Chir.* 26: 431-446, 1929.

There are at present two main theories as to the cause and the nature of this fatty replacement of renal parenchyma: 1. Chronic inflammatory processes in the kidney stimulate hyperplasia of the perirenal and peripelvic fat, which then enter the kidney through the capsule or hilus by active invasion, producing atrophy of renal parenchyma. Von Rokitsansky,² Israel³ and Matsuoka⁴ advocate this theory. 2. Atrophy of the kidney due to some destructive process is the primary factor and is followed by secondary invasion on the part of the proliferating fat. The majority of investigators, including Borst,⁵ Gimpelson,⁶ Elansky,¹ Bacon and LeCount,⁷ Kutzmann⁸ and Krymholz,⁹ favor this theory, whereas a minority hold to the first hypothesis.

In regard to these varying concepts of the cause, it is noteworthy that the kidney retains its integrity despite pressure brought to bear by a retroperitoneal tumor or other large intra-abdominal mass. This fact does not tend to substantiate the theory of atrophy produced by pressure from proliferation of fat. It has been agreed by practically all investigators up to this time that the condition as a whole is due to some slow inflammatory process. Kutzmann⁸ has stated that calculous disease is the primary and initial factor, which leads to infection and destruction of kidney tissue with resulting pyonephrosis. Borst⁵ expressed the opinion that a proliferation of fatty tissue, such as compensates for the defect produced by muscular atrophy in certain types of muscular dystrophy, is active here also. Gimpelson⁶ stated that this phenomenon belongs to the classification hyperplasia ex vacuo: substitution of fat for destroyed parenchyma. This process can be considered biologically as an attempt of the organism to maintain its equilibrium.

Kutzmann⁸ has stated that calculous disease is the primary and initial factor, which leads to infection and destruction of kidney tissue with resulting pyonephrosis. Borst⁵ expressed the opinion that a proliferation of fatty tissue, such as compensates for the defect produced by muscular atrophy in certain types of muscular dystrophy, is active here also. Gimpelson⁶ stated that this phenomenon belongs to the classification hyperplasia ex vacuo: substitution of fat for destroyed parenchyma. This process can be considered biologically as an attempt of the organism to maintain its equilibrium.



Fig. 2 (case 2).—Nephrolithiasis, grade 3 replacement; no stain.

Baader¹⁰ in 1778 first reported the condition in which ureteral calculus, pyelonephritis and fatty changes are observed at autopsy; but it was not until 1837 that Rayer¹¹ described in detail a case of renal

lipomatosis. Previous to 1900 the condition had been seen only at autopsy; Israel³ in 1901 was the first to report it postoperatively. In 1931 an excellent review of the literature was made by Kutzmann,⁸ who collected thirty-two cases and added one of his own. Of these thirty-two cases, twenty-eight were reported from foreign sources. Since 1931 eighteen additional cases have been recorded in the American literature: eleven

by Young,¹² two by Culver¹³ and one each by White and Cambridge,¹⁴ Exley and Devereaux,¹⁵ Kretschmer and Pierson,¹⁶ Peacock and Balle¹⁷ and Wethall. Krymholz in 1932 added two cases of his own to twelve cases which he collected, two of which had been mentioned previously by Kutzmann; he also reported that Tjurkoff had collected seven cases, two of which also were mentioned by Kutzmann. Since the report of Krymholz one case each has been recorded by Scandurra¹⁸ and Gridnev,¹⁹ making a total of seventy reported cases.

Kutzmann reported that stone was found in 79 per cent of his collected cases. In the total seventy reported cases the frequency of stone was 76 per cent. Lipomatosis usually occurs unilaterally, favoring neither the right nor the left kidney, though Richards²⁰ and Griffon²¹ reported cases of bilateral involvement. The age of the patient varied from 10 years, in Browne's²² case, to 77, the age of Peacock and Balle's¹⁷ patient, a man. The period of greatest incidence is between the ages of 45 and 60 years. The frequency is the same in the two sexes.

In the reported cases the clinical diagnosis was made variously as calculous pyonephrosis with perinephritis, calculous pyonephrosis, tumor of the kidney and tuberculosis of the kidney. Krymholz⁹ was the first to report two cases of renal tuberculosis accompanied by lipomatosis. No case has been reported in which the diagnosis was made preoperatively.



Fig. 3 (case 3).—Nephrolithiasis, grade 3 replacement; sudan IV.

2. von Rokitsansky, Carl: *Handbuch der pathologischen Anatomie* Vienna, Braumüller & Seidel 3: 336, 1855.
3. Israel, James: *Chirurgische Klinik der Nierenkrankheiten*, Berlin, A. Hirschwald, 1901.
4. Matsuoka, Y.: *Contributions to the Pathology of Lipomatosis*, J. Path. & Bact. 20: 111-112, 1915.
5. Borst, Max: *Die Lehre von den Geschwülsten*, Wiesbaden, J. F. Bergmann, 1902, p. 143.
6. Gimpelson, E.: *Zu Frage der Fettsubstitution der Nieren*, Ztschr. f. urol. Chir. 26: 651-658, 1929.
7. Bacon, L. H., and LeCount, E. R.: *Fat Replacement of the Kidney in Chronic Suppurative Pyelitis*, Tr. Chicago Path. Soc. 13: 23, 1928.
8. Kutzmann, A. A.: *Replacement Lipomatosis of the Kidney*, Surg., Gynec. & Obst. 52: 690 (March) 1931.
9. Krymholz, M.: *Fat Substitution of Atrophic Kidney*, Ztschr. f. urol. Chir. 36: 343-360, 1933.
10. Baader, cited by La Crampe-Loustau, C.: *Essai sur l'adipose du rein*, Thèse de Paris, 1881.
11. Rayer, P. F. O.: *Traité des maladies des reins*, Paris, J. B. Baillière, 1839.

12. Young, H. H.: *Lipomatosis or Destructive Fat Replacement of the Renal Cortex*, J. Urol. 29: 631-644 (June) 1933.
13. Culver, Harry: *Replacement Lipomatosis of Kidney*, S. Clin. North America 14: 813-819, 1934.
14. White, E. W., and Cambridge, H. S.: *Lipomatosis of the Kidney with Report of a Case*, J. Urol. 31: 699-710 (May) 1934.
15. Exley, E. W., and Devereaux, T. J.: *Replacement Lipomatosis of the Kidney*, J. Urol. 34: 296-301 (Oct.) 1935.
16. Kretschmer, H. L., and Pierson, L. E.: *Fibrolipomatosis of the Kidney*, Illinois M. J. 61: 336 (April) 1932.
17. Peacock, H. A., and Balle, Alfred: *Renal Lipomatosis*, Ann. Surg. 103: 395-401 (March) 1936.
18. Scandurra, Salvatore: *Lipomatous Sclerosis of Kidney: Pathological Study of Case*, Policlinico (sez. chir.) 32: 765-775 (Dec. 15) 1932.
19. Gridnev, A.: *So-Called Fatty Degeneration of Kidney*, Ztschr. f. urol. Chir. 35: 180-188, 1932.
20. Richards, E.: *Remarks on the Fatty Transformation of the Kidney*, Brit. M. J. 2, 1883.
21. Griffon: *Bull. Soc. anat. de Paris* 71: 481, 1896.
22. Browne, J. H.: *Adipose Formation of the Kidney*, Tr. Path. Soc. London 13: 131, 1861-1862.

It is interesting to note that in the last thirty-seven cases reported, in twenty-five of which functional tests were performed, only five of the affected kidneys showed any function whatever. Thus, in 80 per cent of these twenty-five cases the kidney had been auto-nephrectomized. In twenty-one of the thirty-seven cases pyelography was attempted; in thirteen, or 62 per cent, of these twenty-one cases no pyelographic medium or only a very small amount could be injected into the pelvis.

Atrophic pyelonephritis as described by Braasch²³ and renal atrophy as described by Cumming and Schroeder²⁴ seem to be conditions essentially similar to that under consideration. Braasch reported twenty-eight cases; the patients' average age was 38, and none had nephrolithiasis. Cumming and Schroeder reported fifteen cases; the average age was 49, and 80 per cent of the patients had urinary stone. The important features of these conditions seem to be a decrease in the renal parenchyma, as a result of infection, and fibrous

REPORT OF CASES

An examination of the kidney specimens in the Museum of Pathology of the Ohio State University College of Medicine disclosed thirty-seven which showed a significant increase in the peripelvic fat. These were graded as to the degree of increase on the basis of 4, with 1 indicating the least amount of increase deemed to be abnormal and 4 indicating complete fatty replacement. The accompanying illustrations depict graphically the method of gradation. The specimens were stained with sudan IV for better demonstration of the fat, and the fat is therefore black in the illustrations.

The specimens are grouped in table 1 according to the nature of the underlying renal damage. The number of cases in each group is as follows: nephrosclerosis (hypertensive kidney) eight, pyelonephritis five, nephrolithiasis five, cloudy swelling five, tuberculosis three, chronic glomerulonephritis three, hypoplasia two, amyloidosis two, senile arteriosclerotic kidney two and



Fig. 4 (case 4).—Nephrosclerosis, grade 3 replacement; sudan IV.



Fig. 5 (case 5).—Tuberculosis, grade 3 replacement, sudan IV.

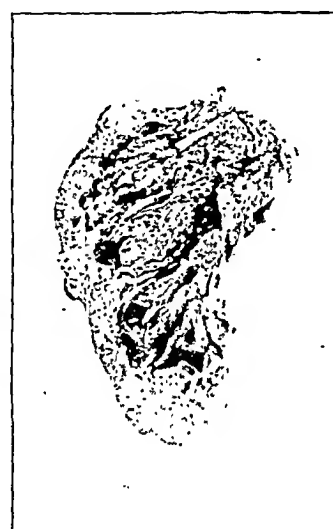


Fig. 6 (case 6).—Senile arteriosclerotic kidney, grade 3 replacement; sudan IV.

replacement, which follows. Although Cumming and Schroeder said little about deposition of fat, one of their illustrations is a beautiful example of fatty replacement. The average age in the reported cases of renal lipomatosis in which the figure is available is 46; in 76 per cent of the reported cases renal calculus was present. Most of the reporting authors have emphasized an infectious source. From these facts one might conclude that these variously described and named conditions are all different phases or manifestations of the same process. In all, destruction of renal tissue, usually by infection, is the primary factor; subsequent to this there is replacement by fat, fibrous tissue or both. In most cases of all types the condition is unilateral and of long duration, and most patients show great or complete loss of function of the involved kidney. We therefore suggest that all these conditions be classed together and described as renal atrophy with fibrous or with fatty replacement. Such a classification would greatly simplify the present complicated nomenclature.

hypernephroma two. Since the number of specimens of a given type of lesion in a museum varies widely both with the relative frequency of the lesion and with the collector's particular interests, these figures are felt to be of comparatively little importance.

In table 2 the cases are arranged according to the amount of fatty replacement present. The resulting figures are deemed to be more significant. It will be noted that the more severe grades of fatty increase occur with those conditions in which there is apt to be considerable destruction of renal parenchyma: nephrolithiasis, tuberculosis, nephrosclerosis, senile arteriosclerotic kidney, chronic glomerulonephritis, congenital hypoplasia and pyelonephritis.

The one case of grade 4 replacement and three of the cases of grade 3 replacement will be considered in some detail. The cases of grade 2 and of grade 1 replacement are included in the tables to show the rather wide variety of renal lesions which may be followed by fatty replacement and to show the comparative frequency of the milder degrees of this process. The cases of cloudy swelling and hypernephroma might at first seem to confuse the issue; however, although the specimens are good examples of these conditions

23. Braasch, W. F.: Atrophic Pyelonephritis, *J. Urol.* 7: 247-257 (April) 1922.

24. Cumming, R. E., and Schroeder, C. F.: Renal Atrophy, *J. Urol.* 27: 407-436 (April) 1937.

and are exhibited as such in the museum, the fatty replacement in each is due to some underlying destructive process, usually nephrosclerosis. It will be noted that none of these shows more than grade 1 replacement.

CASE 1.—M. G., a white woman aged 63, entered St. Francis Hospital Aug. 11, 1936, complaining of pain in the left flank of one and one-half years' duration. At the time of onset she had noticed increased frequency of urination, especially at night. Three months previous to admission she had noticed

2 cm. above the ureteral orifice. Indigo carmine appeared in three minutes in good concentration from the right kidney. No dye or urine could be obtained from the left kidney in forty-five minutes. The obstruction in the left ureter did not allow any sodium iodide to enter. Intravenous injection of neo-iopax showed a normal right kidney and a functionless left kidney. Urine from the right kidney showed 5 red blood cells, 8 white blood cells and 1 plus bacilli. Urine from the bladder showed 4 plus white blood cells, 1 plus bacilli and no acid-fast organisms. The diagnosis was functionless left kidney, with calculous pyonephrosis and perinephric abscess.

Five days after admission, with the patient under ether anesthesia, the perinephric abscess was drained (L. J. R.). Owing to the patient's poor condition on the table, nothing else was done. The wound was closed around an iodoform drain. The temperature rose from normal to 103 F. the first and second days. It was normal the third day and then rose to 104 F., where it remained until the death of the patient on the sixth day. A blood culture taken on the fourth postoperative day was negative. The leukocyte count two days after operation was 26,000, with 89 per cent polymorphonuclears.

The diagnosis at autopsy was nephrolithiasis on the left side; inflammatory destruction of the left kidney, with complete fatty replacement; chronic ureteritis on the left side, with stenosis; chronic cystitis; cholelithiasis, and toxic splenomegaly.

CASE 2.—V. R., a woman aged 49, entered University Hospital June 9, 1930, complaining of pain over the right lower quadrant and tenderness over the right lumbar area, chills and fever, and some urgency and frequency. There was no history

TABLE 1.—Underlying Renal Damage in Thirty-Seven Cases

Diagnosis	Case No.	Degree of Fatty Increase	Average Degree of Fatty Increase per Group
Chronic glomerulonephritis	7 20 19	2 1 1	1.3
Nephrosclerosis	21 8 9 22 23 24 5 10	1 2 2 1 1 1 3 2	1.6
Cloudy swelling	25 26 27 28 29	1 1 1 1 1	1.0
Senile arteriosclerotic kidney	6 11	3 2	2.5
Amyloidosis	30 31	1 1	1.0
Hypoplasia	32 12	1 2	1.5
Pyelonephritis	14 15 34 16 17	2 2 1 2 2	1.8
Nephrolithiasis	13 3 1 33 2	2 3 4 1 3	2.6
Tuberculosis	4 35 18	3 1 2	2.0
Hypernephroma	36 37	1 1	1.0

swelling in the left flank, which steadily increased in size. Since that time she had passed blood at frequent intervals. She had lost 70 pounds (32 Kg.) in the preceding twelve months and had had night sweats during the whole period. The past history was otherwise irrelevant.

The patient was fairly well developed and had a mass over the left flank about the size of an orange, which was slightly tender and fluctuant and somewhat movable. The blood pressure was 125 systolic, 80 diastolic; the temperature ranged from normal to 99.5 F.; the pulse rate was 75, and the respiratory rate was 20. A blood count showed erythrocytes 4,330,000, hemoglobin content 80 per cent, leukocytes 7,100, polymorphonuclears 79 per cent and lymphocytes 21 per cent. A catheterized specimen of urine had a specific gravity of 1.015, 4 plus white blood cells, an occasional red blood cell and 1 plus granular casts. The Wassermann reaction was negative, the nonprotein nitrogen content 28 mg. per hundred cubic centimeters and the sedimentation rate normal. A plain roentgenogram of the abdomen disclosed a calculus in the region of the left kidney; a chest plate gave negative results. Cystoscopic examination showed chronic cystitis. The right ureter was catheterized easily. There was an obstruction in the left ureter

TABLE 2.—Amount of Fatty Replacement in Thirty-Seven Cases

Degree of Fatty Replacement	Case No.	Underlying Renal Damage
Four plus	1	Nephrolithiasis
Three plus	2 3 5 4 6	Nephrolithiasis Nephrolithiasis Tuberculosis Nephrosclerosis Senile arteriosclerotic kidney
Two plus	7 8 9 10 11 12 13 14 15 16 17 18	Chronic glomerulonephritis Nephrosclerosis Nephrosclerosis Nephrosclerosis Senile arteriosclerotic kidney Hypoplasia Nephrolithiasis Pyelonephritis Pyelonephritis Pyelonephritis Pyelonephritis Tuberculosis
One plus	19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37	Chronic glomerulonephritis Chronic glomerulonephritis Nephrosclerosis Nephrosclerosis Nephrosclerosis Nephrosclerosis Cloudy swelling Cloudy swelling Cloudy swelling Cloudy swelling Amyloidosis Amyloidosis Hypoplasia Nephrolithiasis Pyelonephritis Tuberculosis Hypernephroma Hypernephroma

of hematuria or stone. The pain over the right lower quadrant had been present for several years but had become acute in the three weeks preceding admission. The past history was otherwise irrelevant.

Physical examination showed a fairly well nourished woman with marked kyphosis and scoliosis. There was tenderness over the right renal area, and an indefinite mass was felt in the right lumbar area. The temperature ranged from normal to 103 F. daily. The pulse rate varied from 90 to 120 daily; the respiratory rate was 20. Urinalysis showed a specific

gravity of 1.020, a 2 plus reaction for albumin, 4 plus white blood cells and no red blood cells. The phenolsulfonphthalein test showed 45 per cent elimination in the first hour and 10 per cent in the second hour. The nonprotein nitrogen content was 22 mg. per hundred cubic centimeters on June 10, 40 mg. on June 16 and 20 mg. on June 27. A blood count showed erythrocytes 3,480,000, hemoglobin content 38 per cent, leukocytes 7,800 and polymorphonuclears 73 per cent. The Wassermann reaction was negative. Cystoscopic examination revealed chronic cystitis; the bladder was otherwise normal. The ureters were catheterized easily. The urine from the right ureter contained 2 plus white blood cells and from 1 to 3 red blood cells; the urine from the left ureter contained from 4 to 6 white blood cells and from 3 to 5 red blood cells. Indigo carmine injected intravenously appeared in the urine from the left kidney in six minutes in excellent concentration but did not appear in the urine from the right kidney after one hour. A roentgenogram showed a stone in the region of the right kidney. The pyelogram of the right side showed a marked filling defect in the pelvis. The diagnosis was renal stone on the right side and pyonephrosis.

Ten days after admission the right kidney was drained and stones were removed by Dr. W. N. Taylor. Three days later

The patient was operated on under spinal anesthesia by Dr. Taylor. A curved right lumbar incision was made into the fatty capsule. The renal mass was very large and difficult to enucleate, owing to well organized adhesions. By removing the stone from the kidney and draining the pyonephrosis the size of the kidney was reduced and its removal was made easier. The pedicle vessels were tied individually, and the wound was closed in three layers around a gauze drain. The convalescence was uneventful, and the patient was discharged July 11.

The removed kidney was large; the pelvis was dilated and contained several stones. There was marked destruction of renal parenchyma, with replacement by fat.

CASE 4.—G. M., a man aged 38, entered St. Francis Hospital Jan. 23, 1934, complaining of hemorrhage from the nose, shortness of breath and swollen ankles. He had nocturia, urinating from four to five times. His past history was irrelevant except for smallpox in 1928 and an injury to the left eye in 1932.

Physical examination showed a fairly well developed white man sitting upright in bed and evidently dyspneic. The head and the right eye were normal. The left eye showed fibrotic changes in the cornea; the left nostril contained a pledget of cotton saturated with blood. The teeth were carious. The heart was enlarged to the left, and the sounds were muffled.



Fig. 7 (case 7).—Chronic glomerulonephritis, grade 1 replacement; sudan IV.



Fig. 8 (case 24).—Nephrosclerosis, grade 1 replacement; sudan IV.



Fig. 9 (case 30).—Amyloid disease, grade 2 replacement; sudan IV.



Fig. 10 (case 32).—Hypoplasia, grade 2 replacement; sudan IV.

the temperature fell to normal. Five days later a nephrectomy was performed by Dr. Taylor. The convalescence was uneventful and the patient was discharged July 17, 1930.

The removed kidney showed calculous pyonephrosis and practically complete gross and microscopic destruction of renal tissue, with replacement by fat and fibrous tissue.

CASE 3.—N. G., a woman aged 66, entered University Hospital June 8, 1931, complaining of pain in the right side, which had been present for twenty-three years, and hematuria, which had commenced six weeks previous to admission. She had had some frequency but gave no history of gravel, chills or fever. She had lost 50 pounds (23 Kg.).

Physical examination gave essentially negative results except that it showed a mass in the right upper quadrant, which extended from the costal margin to the level of the umbilicus and to the midline. This moved on respiration and was firm and slightly nodular. Cystoscopic examination disclosed chronic cystitis. The right ureteral orifice was edematous and injected. The bladder was otherwise normal. Indigo carmine appeared from the left ureter in five minutes in excellent concentration. No dye appeared from the right side in half an hour. Urine from the right kidney showed pus 3 plus; the urine from the left kidney was normal. The urine from the bladder showed from 50 to 60 leukocytes and 2 plus bacteria. The pyelogram of the right side showed a staghorn calculus with infection. A blood count showed red cells 2,750,000, hemoglobin content 48 per cent, leukocytes 24,950 and polymorphonuclears 91 per cent. The Wassermann reaction was negative. The diagnosis was calculus of the right kidney with pyonephrosis.

The blood pressure was 220 systolic, 115 diastolic. The scrotum and legs were edematous. The urine showed a 4 plus reaction for albumin, an occasional white cell, an occasional granular cast, an alkaline reaction and a specific gravity of 1.013. A blood count showed red cells 2,250,000, hemoglobin content 40 per cent, white cells 7,750, polymorphonuclears 95, lymphocytes 4 and monocytes 1. The nonprotein nitrogen content was 60 mg. per hundred cubic centimeters. The Wassermann reaction was 4 plus. On February 12 the nonprotein nitrogen was 133 mg. The patient's condition grew steadily worse; purpuric spots developed on the neck and chest. He died March 28. The diagnosis was hypertensive cardiac decompensation, pneumonia of the lower lobe of the right lung and chronic glomerulonephritis.

The postmortem diagnosis was generalized arteriolar sclerosis, marked nephrosclerosis with fatty replacement of renal parenchyma, cardiac hypertrophy and lobar pneumonia.

COMMENT

In the seventy cases reported to date of replacement lipomatosis of the kidney a correct preoperative diagnosis has not been made. In most of these cases the diagnosis has been calculous pyonephrosis, tumor of the kidney, tuberculosis of the kidney or chronic glomerulonephritis. In each there was a history of infection over a long period.

There are no outstanding clinical symptoms to indicate the presence of replacement lipomatosis. There

may or may not be pain over the area of the kidney. The chronicity of the infection may produce pyuria with or without dysuria. The urine may be normal, because many affected kidneys are functionless and are accompanied by a normal kidney on the opposite side. The tests for blood chemistry and renal function

should be ample evidence that the process, especially in its milder forms, is not uncommon. Furthermore, every pathologist performing routine autopsies is well acquainted with the fact that an increase in peripelvic fat commonly occurs in any situation in which the amount of renal parenchyma is severely decreased.

In this series of thirty-seven cases there are included (aside from hypernephroma and cloudy swelling, which are probably not primarily concerned) eight types of underlying pathologic process: nephrolithiasis, pyelonephritis, tuberculosis, chronic glomerulonephritis, nephrosclerosis, senile arteriosclerotic kidney, amyloidosis and congenital hypoplasia. Of these, four (nephrosclerosis, senile arteriosclerotic kidney, hypoplasia and amyloidosis) are definitely of noninflammatory origin, and one (chronic glomerulonephritis) is due not to the presence of bacteria in the kidney but to toxins formed elsewhere and acting on the kidney. Only three (nephrolithiasis, pyelonephritis and tuberculosis) are characterized by local infection. Furthermore, practically all the conditions which cause extensive destruction of renal parenchyma with concomitant decrease in renal bulk are included in this list. This should serve to illustrate rather clearly the point that the cause of the condition is specific only in that it implies destruction of renal tissue and decrease in the size of the renal mass.



Fig. 11.—Fatty replacement due to pyelonephritis.

usually give normal results, because the condition is almost always unilateral. Since the advent of pyelography, in 62 per cent of the cases in which this procedure has been attempted a marked filling defect has been shown or else the ureteral obstruction has been such that little or no pyelographic medium could be injected. Tests of the renal function were performed in twenty-five cases, in 80 per cent of which the affected kidney was shown to be functionless. In 76 per cent of the reported cases a renal calculus was present.

When such conditions as chronicity of infection, renal calculus, functionless kidney and a marked filling defect in a pyelogram are found concomitantly one must suspect atrophy of the kidney with replacement lipomatosis. It is to be understood that these statements apply only to the condition generally termed replacement lipomatosis and are not applicable to fatty replacement complicating the various types of Bright's disease.

COMMENT ON PATHOLOGY

Although much has been written concerning fatty replacement of the kidney, the frequency of the milder degrees of this condition, the wide variety of underlying pathologic processes and the similarity of this state to certain other rather common types of tissue change have been largely overlooked. The major purpose of this paper is to emphasize phases of the problem.

The fact that thirty-seven examples of this condition were rather easily and quickly discovered in an average



Fig. 12.—Fatty replacement due to tuberculosis.

Briefly stated, there are five types of fatty change which should be mentioned in a discussion of this subject: fatty tumor or lipoma; fatty degeneration of parenchymatous tissues, representing probably merely a change in the nature of preexisting invisible fat so that it becomes visible; fatty infiltration, consisting of storage of fat such as is seen in obesity; lipoid histo-

cytosis, which is probably a constitutional or metabolic disturbance, and fatty replacement of inactive or destroyed tissue. Of these, we are concerned mainly with the one last mentioned. Numerous examples of situations in which fat replaces regressing parenchymatous tissue can be cited, of which only a few will be



Fig. 13.—Fatty replacement due to nephrosclerosis.

given here. One of the most obvious examples is seen in the varying relationship between fat, fibrous tissue and secretory tissue in the breast under physiologic conditions; the nonlactating female breast is made up largely of fat, the lactating breast is composed almost entirely of secretory epithelium and the breast after lactation returns to its previous fatty nature. Another example is seen in the bone marrow. The marrow of infants is abundant and red; in the adult the marrow of the long bones is normally almost entirely fatty; with the advent of a condition such as pernicious anemia the marrow of the long bones again becomes active in the formation of blood cells, and the fat disappears, only to reappear in the event of satisfactory treatment. The skeletal muscle of the extremities normally contains little visible fat; however, after amputation the muscles proximal to the point of amputation undergo a disuse atrophy and are largely replaced by fat. From these few citations it will be seen that one of the normal functions of fat is to fill in any otherwise unoccupied space and to act as padding.

Summarizing these various phases of the process into a single thesis, we see that the fundamental underlying cause of fatty replacement of the kidney is a decrease in the size or bulk of the kidney from any cause; that since there are many such causes this process is common and occurs under widely differing circumstances, and that the process is in keeping with the laws of the body as a whole and is not one peculiar to the kidney.

CONCLUSIONS

1. Fatty replacement of the kidney is not a rare condition.
2. It occurs as a result of any process which destroys renal tissue or otherwise decreases the bulk of the kidney.
3. Inflammation has no specific relationship to the causation of fatty replacement.
4. This situation is similar to many others frequently occurring elsewhere in the body, in which fat replaces a regressing parenchyma.
5. Thus far a clinical diagnosis has not been made cooperatively.
6. Chronicity of infection, the presence of renal calculus, a functionless kidney and a marked filling defect in the pyelogram occurring concomitantly should lead one to consider the possibility of the presence of fatty replacement of the kidney.

Clinical Notes, Suggestions and New Instruments

OSTEOMA OF FRONTAL SINUS AND PENETRATION OF LATERAL VENTRICLE, WITH INTERMITTENT PNEUMOCEPHALUS

ELDRIDGE H. CAMPBELL, M.D., AND R. B. GOTTSCHALK, A.B.
ALBANY, N. Y.

While some osteomas of the frontal and ethmoidal sinuses may long remain asymptomatic, many others have been observed to cause local pains and headaches. If the bony growth or an associated mucocoele bulges into the cranial cavity, corresponding cerebral disturbances may follow. Pneumocephalus has been observed in several patients suffering with

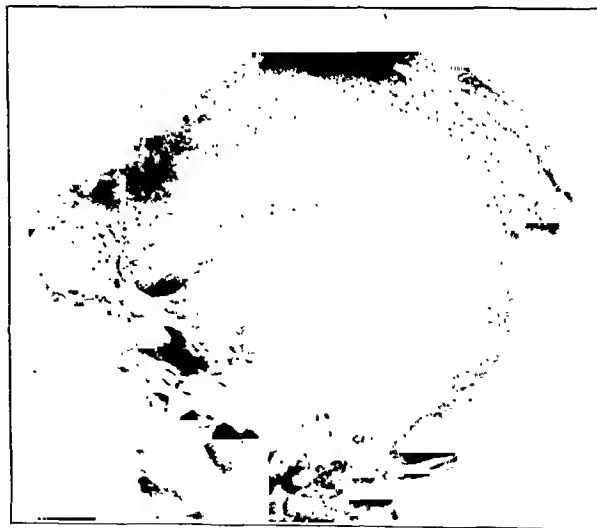


Fig. 1.—Osteoma of the left frontal sinus. The head is in the lateral position, and air may be seen in the left ventricle.

these tumors.¹ In one of Dr. Cushing's cases (reported by Armitage²) the mucocoele had actually penetrated the lateral ventricle. Recently we have studied a similar case, in which

From the Department of Surgery of the Albany Medical College.

1. Cushing, Harvey: Experiences with Orbito-Ethmoidal Osteomata Having Intracranial Complications, with Report of Four Cases, *Surg., Gynec. & Obst.* 44: 721 (June) 1927. Payne, A. E., and Jeans, W. D.: Intracranial Pneumatocele. *Brit. J. Surg.* 23: 679 (Jan.) 1936. Armitage,² Hoover and Horrax.⁴

2. Armitage, George: Osteoma of the Frontal Sinus, *Brit. J. Surg.* 18: 565 (April) 1931.

the principal complaints were of general convulsions and headaches. Since this situation is apparently uncommon, we have ventured briefly to record our observations.

A. R., a white man, aged 26, a chauffeur, was admitted to the Albany Hospital on Dec. 29, 1936, complaining of con-

and on several occasions had been accompanied by vertigo, by tinnitus in the right ear and by nausea and vomiting. They were notably aggravated by jolting and by stooping over. Shortly after the onset he commenced to hear a curious noise within his head, as of "water flowing," always from the front to the back. At times even his wife could hear this sound, particularly if he shook his head. There were long intervals when the "splashing" was not present.

Two months before he entered the hospital, violent generalized convulsions began. Since they always occurred during sleep, the patient was not aware of them, but the supra-orbital headaches were likely to be more severe the next morning. At about the same time his wife noticed some change in his personality, that he was becoming more irritable and quarrelsome.

Six weeks before he entered the hospital the headaches became particularly severe behind the left eye and in the left suboccipital region and were associated with constant nausea. The pain was worse when the patient sat up, so that he insisted on lying perfectly flat in bed, without even a pillow. A lumbar puncture then revealed clear, colorless spinal fluid, under no increase of pressure (130 mm. of water), a cell count of 2 and a total protein content of 46 mg. per hundred cubic centimeters. The Wassermann reactions of the blood and the spinal fluid were negative. A roentgenogram of the skull taken at that time by Dr. W. P. Howard disclosed a large osteoma of the left frontal sinus. The tumor appeared to extend posteriorly for from 3 to 4 cm. and to have over it the displaced and thickened posterior wall of the sinus. A subsequent review of these films revealed no air within the cranial cavity.

On examination at this time the patient was seen to be well developed, of good color, a little underweight and evidently in some distress. The pain was then principally behind the left eye, and he stated that he had been hearing the noise in his head recently. With the room perfectly quiet, a faint splashing sound could be heard distinctly when his head was quickly nodded. With the stethoscope this sound was most plainly audible in each temporal region.

The vital signs were normal, and the neck was not stiff. No external bony deformity of the skull was found. The left eye slit was perhaps a trifle narrower than the right; other than this, the general physical and neurologic examination revealed no abnormalities. The left eyeball was not protruded or rotated.

Roentgenograms made at this time with the head in the lateral position (fig. 1) revealed air in the lateral ventricles; when the head was rotated so that the forehead was up, the air was shown to have left the ventricles and to have collected outside the left frontal lobe and just above the osteoma (fig. 2).

A frontal osteoplastic craniotomy on the left side was performed (E. H. C.) on December 30, the anteriormost edge of the bone flap passing just above the frontal sinus. When the dura was retracted, the large osteoma was readily brought into view. At its upper margin there was a cone-shaped elevation surrounded by a collar of dura. When we attempted to obtain further exposure at this point, the dura suddenly separated from the osteoma, carrying within it most of a mucocoele. The intracranial surface of the bony tumor was then completely exposed. It proved to have a broad attachment to the floor and the anterior wall of the sinus. Removal was accomplished piecemeal with chisel and gonge (fig. 3). The lateral portion of the sinus was filled with mucocoele, which was carefully cleaned out. There was no sign of infection.



Fig. 2.—Appearance a few moments after that shown in figure 1, with the forehead rotated upward, showing the air to have passed out of the ventricle and to have collected in the subdural space.

vulsive attacks, of generalized headaches and of a noise "like water running" in his head. (He was referred to the medical service of Dr. Thomas Ordway by Dr. John Mosher of Coeymans, N. Y.) He had been in good health until fourteen



Fig. 3.—The osteoma after its piecemeal removal. The rulings are in centimeters.

months previously. At that time he began to have bouts of dull, bilateral, low frontal and retro-orbital pain, which occasionally radiated to the right ear and down the right side of the neck. Of late the headaches had become more severe

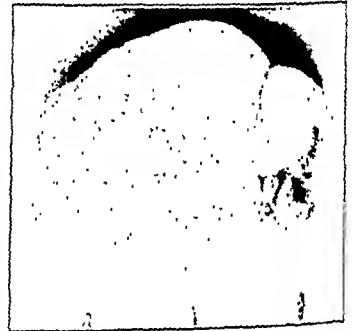


Fig. 4.—The posterior surface of the mucocoele after its removal from the ventricle.

A vertical incision was then made in the dura, extending upward from the circular opening for about an inch. Some air escaped. A glistening, grayish mucocele with many small lobulations was seen bulging into the underlying brain. The original dural incision was then extended to include the

ventricle (fig. 5). The septum pellucidum and the foramen of Monro were plainly seen. The cortical arachnoid appeared to be continuous with the ependymal lining of the ventricle.

The dura was then completely closed, the defect being repaired with a small patch of temporalis fascia.

The convalescence was uneventful. In the fifteen months which has elapsed since the operation, the patient has had no headaches, no convulsions and no more of the curious sounds within his head.

COMMENT

Air is not infrequently found within the cranial cavity after a fracture through the paranasal sinuses. Dandy,³ in discussing the surgical significance of pneumocephalus, pointed out the resulting danger both from infection and from increased intracranial pressure. He showed that closure of the dural defect prevented the reaccumulation of air and obviated further danger of meningitis.

The vagaries of orbito-ethmoidal osteomas have been related by Cushing.¹ His experience and subsequently that of Hoover and Horrax⁴ showed the advisability of attacking these growths through an intracranial approach. The inward intrusion of the mucocele is seldom demonstrable by ordinary roentgenograms. Even in the absence of pneumocephalus or of neurologic signs and symptoms, it is not possible to be sure that an osteoma which involves the inner wall of the sinus has no intracranial component. Removal of the mass through the sinus may be difficult or even impossible, and the danger of carrying infection in is certainly great. In order, therefore, to deal adequately with the growth and its associated mucocele, if present, and in order securely to patch the dural opening, should one be found to exist, an osteoplastic craniotomy is essential. The incision may be placed entirely within the hair-line, and no scar or deformity need result. The operation should carry with it a minimum of risk.

32 Willett Street.

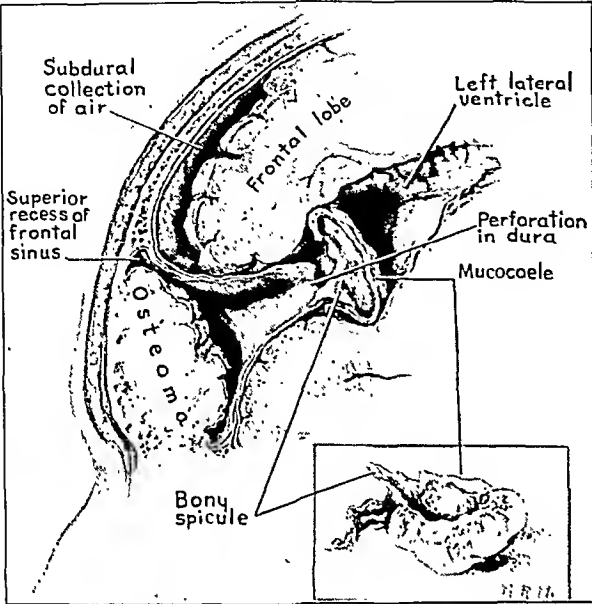


Fig. 5.—Semidiagrammatic drawing to show the osteoma of the left frontal sinus and its relation to the intraventricular mucocele.

FRACTURE OF THE OPTIC CANAL CAUSING
OPTIC ATROPHY

EUGENE FREEDMAN, M.D., CLEVELAND

Roentgenologic visualization of the optic canal was first described in 1917 by de Kleyn and Stenvers.¹ The authors read an article by Rhese² demonstrating the visualization of the posterior ethmoid cells and the sphenoid sinuses on an oblique roentgenogram of the facial bones. Seeing the reproduction, de Kleyn and Stenvers realized that with slight modification Rhese's position could be utilized to demonstrate the optic canal. During the past few years roentgen technic of the optic canal has been simplified with the aid of excellent localizing devices developed by Pfeiffer³ and by Camp and Gianturco⁴ which eliminate the measurement of certain angles and various other haphazard elements of the technic.

The indications for roentgen examination of the optic canal are numerous, but the procedure is employed chiefly in primary and secondary diseases of the optic nerve in an attempt to demonstrate either diseased posterior ethmoid cells surrounding the optic canal, as the cause of a primary optic atrophy, or enlargement and destruction of the optic canal by a tumor of the optic nerve, or by an intracranial tumor growing into the orbit through the optic foramen.

The osseous canal normally affords great protection to the optic nerve, but during injuries to the head and eye, it may



Fig. 6.—The patient twelve weeks after operation. The incision, being that employed for the removal of pituitary tumors, is largely concealed within the hairline.

collar of attached dura. When this was done, the entire tumor was readily lifted out of the frontal lobe. There were no adhesions between it and the brain, and no bleeding ensued.

On further inspection it was discovered that the hole made by the mucocele, and hence the latter itself (fig. 4), had extended directly into the anterior horn of the (left) lateral

3. Dandy, W. E.: Pneumocephalus, *Arch. Surg.* 12: 949 (May) 1926.
4. Hoover, W. B., and Horrax, Gilbert: Osteomas of the Nasal Accessory Sinuses, *Surg., Gynec. & Obst.* 61: 821 (Dec.) 1935.
From the Department of Roentgenology of the University Hospitals.
1. de Kleyn, A., and Stenvers, H. W.: Weitere Beobachtungen über die genauere Lokalisation der Abweichungen im Bereiche des Foramen opticum und der Ethmoidalgegend mit Hilfe der Radiographie, *Arch. f. Ophth.* 92: 216, 1917.
2. Rhese: Die chronischen Entzündungen der Siebbein Zellen und der Keilbeinhöhle, *Arch. f. Laryng. u. Rhin.* 24: 383, 1910-1911.
3. Pfeiffer, R. L.: A New Technique for Roentgenography of the Optic Canals, *Am. J. Roentgenol.* 29: 410 (March) 1933.
4. Camp, J. D., and Gianturco, C.: A Simplified Technique for Roentgenographic Examination of the Optic Canals, *Am. J. Roentgenol.* 29: 547 (April) 1933.

sustain a fracture, and this may be followed by an optic atrophy. The atrophy is caused either by the pressure of the depressed wall or by an intracanalicular hematoma. Occasionally a loose fragment of bone may pierce the optic nerve, leading to the development of atrophy. The first report of fracture of the

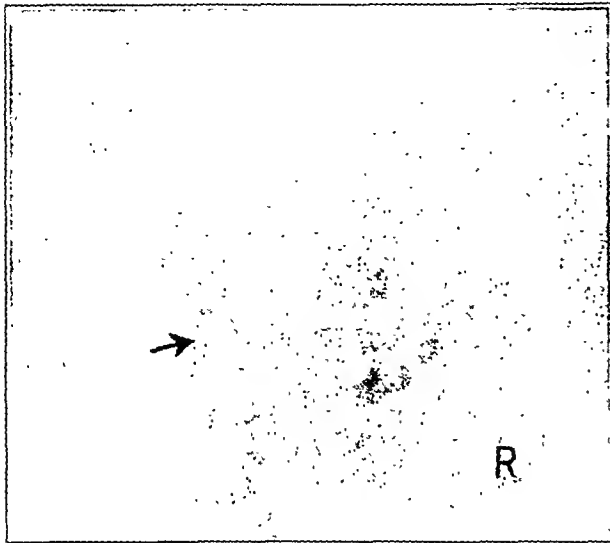


Fig. 1.—Normal optic canal on the right side.

optic canal associated with optic atrophy was published by Goalwyn⁵ in 1926. The roentgenogram of the optic canal showed a fine fracture line extending from the sphenoidal fissure into the optic canal, and a hematoma was surmised to be the cause of the atrophy.

According to my knowledge the case to be reported is the second one in which the cause of optic atrophy was a fracture of the optic canal:

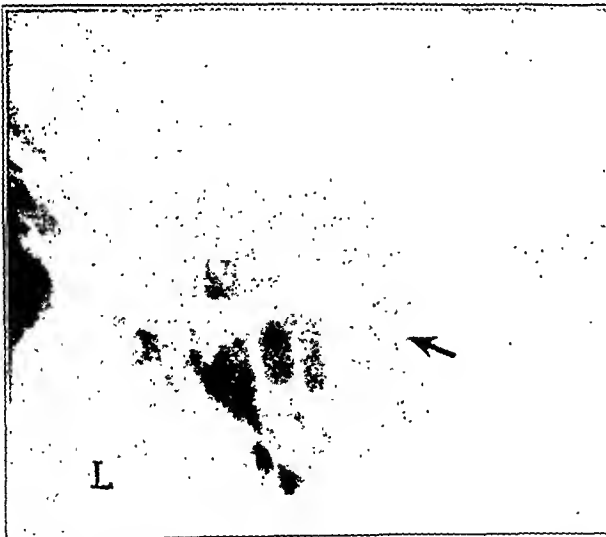


Fig. 2.—Depression of the lateral wall of the left optic canal and the tiny loose fragment of bone within the lumen of the canal.

E. H., a white man aged 46, admitted to the outpatient department of the University Hospitals Dec. 21, 1937, complained of blindness of the left eye of one year's duration. A year before the patient was thrown from an automobile onto the pavement in such a way that the running board came to rest on his head. The automobile had to be raised to free him. He received immediate treatment at another hospital.

5. Goalwyn, H. A.: The Clinical Value of Optic Canal Roentgenograms, *Arch. Ophth.* 55:1 (Jan.) 1926.

As he regained consciousness he noted that there was no light perception in the left eye. He was told that there was a "blood clot" pressing on his eye.

Examination of the eyes on admission by Dr. Lorand V. Johnson revealed the following changes:

Examination with glasses: right eye, 6/7.5; left eye, no light perception.

Visual fields: right eye, normal; left eye, no light perception.

Right eye: pupil, tension, media and disk not remarkable. Left eye: no direct or consequential pupillary reflex and, with the right eye covered, an amaurotic nystagmus; media clear; very marked optic atrophy (probably secondary); macula and retina not remarkable.

Roentgen examination of the skull, facial bones and optic canal revealed a healed depressed fracture of the left zygoma and a wide linear fracture in the right occipital region measuring about 8 cm. in length and 3 mm. in width. The right optic foramen was round, was smooth in contour and measured about 6 mm. in diameter (fig. 1). The lateral wall of the left optic canal was depressed medially and in addition a loose fragment of bone measuring about 3 mm. in length and 1 mm. in width (fig. 2) was seen to lie within the lumen of the optic canal. It was concluded from this examination that the optic atrophy was caused partly by the pressure of the depressed wall of the lateral canal and partly by the loose fragment of bone, which had probably pierced the optic nerve.

The case is reported to call attention to the value of the special study of the optic canal in cases of trauma to the orbital region. This may be of great importance from the standpoint of a possible immediate exploration of the optic canal to free the nerve from the effects of pressure caused by a fracture of the walls.

2065 Adelbert Road.

HEREDITARY MULTIPLE TELANGIECTASIS WITH EPISTAXIS

METHOD OF TREATMENT

GEORGE HUNTER O'KANE, M.D., MED. SC.D., NEW YORK

Hereditary multiple telangiectasis with epistaxis, known also as Rendu-Osler-Weber disease, is a syndrome in which the terminal vessels, the capillaries and the venules become dilated.¹ On microscopic examination these dilated vessels are found to have a single layer of endothelial cells covered by a very thin epithelium.² As a result of this peculiar anatomic construction, these vessels readily become dilated and bleed profusely following the slightest trauma.

These lesions appear grossly as small red or purplish spots, usually occurring on the nasal mucosa of the septum and turbinates and sometimes occurring on the oral mucosa and skin as seen in this patient.² It is known that the telangiectases may occur anywhere in the skin or mucous membranes and may become manifest as hematuria, gastrointestinal bleeding, uterine bleeding or epistaxis.¹

This disease, unlike hemophilia, may be transmitted by either sex and may affect either the male or the female. Unlike hemophilia, the bleeding and coagulation time are normal.

The diagnosis depends on three factors: (1) a history of repeated hemorrhages, (2) a history of familial occurrence and (3) the discovery of telangiectatic lesions in the mucous membranes.

LITERATURE

In reviewing the recent literature on the subject, one author suggests that telangiectases may occur in the brain or viscera causing early death.⁴ This has some bearing on this case.

From the Service of John D. Kernan, M.D., Columbia-Presbyterian Medical Center.

Read before the New York Academy of Medicine, Section of Otolaryngology, Jan. 19, 1938.

1. Pearlman, S. J.: Heredofamilial Telangiectasis or the Rendu-Osler-Weber Disease, *Arch. Otolaryng.* 23: 257 (Feb.) 1936.

2. Houser, K. M.: Congenital Multiple Hemorrhagic Telangiectasis with Epistaxis, *Arch. Otolaryng.* 20: 438 (Sept.) 1934.

3. Osler, William: Cong. Hem. Telangiectases, *Bull. Johns Hopkins Hospital* 12: 330, 1901.

4. Piskiewicz, F. J.: Hereditary Multiple Telangiectases, *Arch. Otolaryng.* 17: 429 (March) 1933.

since all the patient's siblings died in infancy and may have been afflicted with this disease.

It has been noted by others that epistaxis caused by this disease has an unexplained tendency to cause hemorrhage in the spring and autumn months.⁵ It has also been observed

tries to inject directly into the vessel or to apply escharotics or coagulation directly. The type of packing that we have found most suitable for this purpose is half inch bismuth glycerin gauze packing. The packing may be removed in twenty-four hours.

It is advisable to attempt obliteration in several sittings, since the method is apt to be painful and to produce a local reaction. Moreover, one must bear in mind the possibility of idiosyncrasy to quinine.

It is interesting to note that in this case no new nevi arose at the site of previous injections. As new nevi do arise they can be destroyed before they cause epistaxis.

REPORT OF CASE

F., a man, aged 71, has had frequent nosebleeds since childhood. His father also suffered from frequent and severe epistaxis. The patient's nosebleeds became more severe at the age of 18 after a fracture of the nose. From this time until he was 43, he allowed the hemorrhages to continue until they stopped spontaneously. When he was 43 the bleeding increased in severity and frequency, so that he sought medical aid. Within a period of two years he underwent nine intranasal operations, including almost complete removal of the septum. The bleeding was not relieved. It recurred at frequent intervals, lasting from two to four hours.

Three years before admission to Vanderbilt Clinic, he received radium treatment at a nose and throat hospital in New York. During the treatment he suffered a severe epistaxis, which was controlled with difficulty and necessitated transfusion.



Fig. 1.—Right side of face showing numerous spider telangiectases.

that hemorrhages tend to become more frequent and severe toward middle age.² As I shall point out later, this was true of this patient.

In the world's literature there are reports of eighty-five families in which the disease has occurred, although the disease is probably more common than these figures indicate.⁶

METHODS OF TREATMENT

Methods of treatment have included the galvanocautery, diathermic coagulation, the application of escharotics such as silver nitrate, chromic acid bead and trichloroacetic acid. Radium has also been used. Radium makes the lesions friable and is apt to precipitate bleeding.² It has also been reported to have caused destruction of the cartilage of the nasal septum.² The difficulty with all these methods is that direct attack on the dilated vessels invariably produces severe hemorrhage that is difficult to control.

The method of treatment that we found successful in this case, after the methods mentioned had failed, is based on an indirect approach to the lesions. A fine pointed needle such as one uses to anesthetize the tonsillar area is introduced under the normal mucous membrane adjacent to the dilated vessel and enough 5 per cent quinine and urethane solution is injected to raise a small bleb alongside the vessel. The nose is then packed firmly over the injected area, which procedure allows the solution to diffuse into the vessel and obliterate it. In this way one avoids hemorrhage, which invariably ensues if one



Fig. 2.—Right side of face under infra-red rays, showing telangiectases deep in skin.

When first seen in Vanderbilt Clinic Feb. 28, 1934, he had his nose packed with cotton. On removal of the cotton a severe nasal hemorrhage ensued. The nose was immediately repacked with bismuth gauze, which controlled bleeding. On admission to the Presbyterian Hospital the packing was removed and large purplish dilated vessels were observed on the lateral nasal

5. Schmitt, H.: Hereditary Hemorrhagic Telangiectases, *Ztschr. f. Larync., Rhin., Otol.* 22: 28 (Dec.) 1931.

6. Woodman, DeGraaf, and Opin, Edward: Personal communications to the author.

walls and the remains of the septum. When an attempt was made to electrocoagulate one of them, a drenching hemorrhage occurred, precluding further examination or treatment at that time. On each subsequent removal of packing, severe hemorrhage occurred. Dr. Maurice Lenz, chief of the department of radio therapy, was consulted and agreed to try radiotherapy. A 10 mg. radium tube in petrolatum gauze was placed in the right side of the nose and a 12.5 mg. tube was inserted in the left naris. This treatment did not obliterate the lesions and was abandoned at the suggestion of Dr. Lenz.

Among other consultants, he was seen by Drs. J. G. Hopkins and Beatrice Kesten of the department of dermatology and Dr. G. U. Carneal of the surgical staff. At their suggestion a 5 per cent solution of quinine and urethane was injected as described. This treatment was carried out with apparent obliteration of the larger lesions from March 7 to March 19, 1934. The patient was discharged with bleeding arrested.

During his stay in the hospital the stool gave a + + + + guaiac test; proctoscopic examination was negative. The melena, we believe, was due to swallowed blood, for when the nasal bleeding was controlled the stool gave a negative guaiac test. The bleeding time was three and one half minutes; the clotting time was three minutes. Hemoglobin at this time was 50 per cent; red blood cells numbered 3,100,000. The blood pressure was 140 systolic and 90 diastolic. The Wassermann reaction of the blood was negative.

Clinical examination showed varicosities on the face, in the nose and under the tongue. As far as could be ascertained, no other skin or mucous areas were affected.

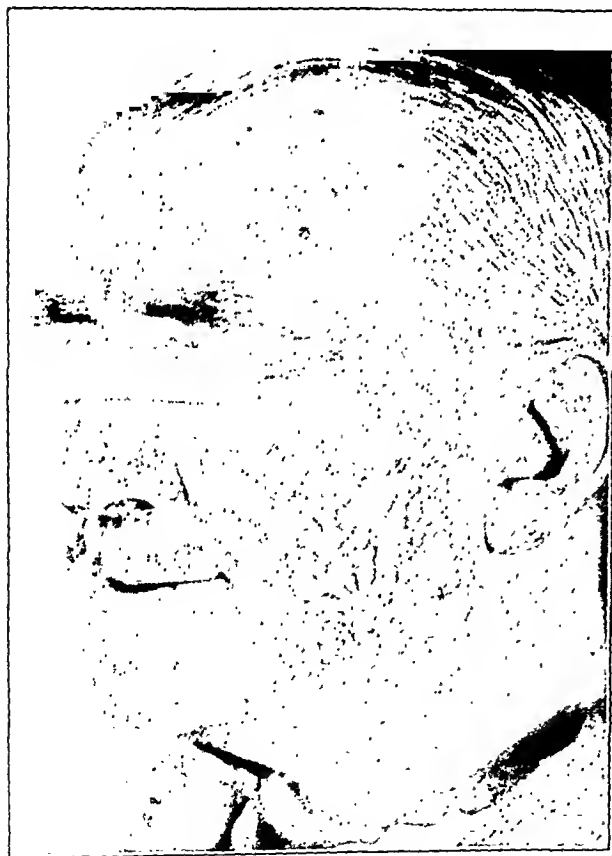


Fig. 3.—Left side of face showing surface spider telangiectases and round nevi.

From March to June 1934 he had eleven more injections with definite diminution in the severity of the hemorrhages, with the exception of one severe epistaxis May 24. For two months after this he was free from hemorrhages. Then from August 11 to October 1 he had a series of hemorrhages which were readily controlled in the clinic. Feb. 8, 1935, he bled

again. The bleeding was not severe, however. During the following ten months he required only five injections. When seen Dec. 20, 1935, there were no lesions visible. No injection was required.

Since that time, more than two years ago, he has been almost entirely free from epistaxis. The slight bleeding that has occurred has been readily controlled with a light cotton plug.



Fig. 4.—Left side of face under infra-red rays, showing deep spider telangiectases and nevi.

During the past two years he has cut out alcohol and tobacco, and he drinks only one cup of coffee a day. It has been his impression in the past that these drugs seem to have precipitated bleeding.

SUMMARY AND CONCLUSIONS

1. Submucous injection of quinine and urethane, 5 per cent solution, presents a simple and effective means of controlling hereditary multiple telangiectasis with epistaxis, a troublesome and dangerous disease.
2. Vasodilators such as alcohol and stimulants such as coffee should be forbidden in the treatment of these patients.
3. This condition is not amenable to surgery.

116 East Fifty-Third Street.

Linnaeus, Physician and Botanist.—That Linnaeus was a graduate physician is not well known, yet he practiced medicine with great success, and as professor of medicine at Uppsala contributed much to medical teaching in Sweden at a time when the standards of medical education were at low ebb. In botany, he reigns supreme and is regarded by the world of science as one of the greatest naturalists of all time. He is often spoken of as the King of Flowers. . . . Carolus Linnaeus was born in southern Sweden on May 23, 1707, the first child of a country minister.—Larsson, B. Hjalmar: *Carolus Linnaeus, Physician and Botanist*, *Ann. M. Hist.* 10:197 (May) 1938.

Special Article

VITAMIN A

METHODS OF ASSAY AND SOURCES IN FOOD

HAZEL E. MUNSELL, PH.D.

WASHINGTON, D. C.

This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—Ed.

The early recognition of the significance of vitamin A as an essential constituent of the diet of man made the quantitative as well as the qualitative identification of food sources an important problem for investigators engaged in research on nutrition. Although vitamin A was one of the first, if not the first, of the vitamins to be discovered, accurate quantitative methods of analysis have been slow of development. This can be explained by the fact that, although its chemical identity had been established with reasonable certainty, synthesis of the vitamin and its separation in crystalline form was accomplished only recently.¹ The situation has been further complicated by the necessity for adopting a device for expressing vitamin A potency, since obviously the values could not be expressed in terms of vitamin A. In some of the early studies attempts were made to find some product that might serve as a standard, but it soon became apparent that the vitamin A content of natural foods was so variable that the chances of finding a suitable substance were remote. Several "units" accordingly were suggested.

After the discovery had been made that carotene is converted into vitamin A by the animal organism, the Permanent Commission on Biological Standardization of the Health Organization of the League of Nations selected a well defined sample of carotene as the International Standard of Reference.² Although the selection of a substance of standard vitamin A potency has now been achieved, the preferred method of assay is still unsettled. In general the methods proposed are of three types: the so-called biologic methods, based on the behavior of laboratory animals; the color tests, and the more recently developed spectrographic, or absorption, methods. The biologic methods include the growth test; the ophthalmia test, based on the cure or prevention of the typical ocular condition due to a deficiency of vitamin A, and the vaginal smear test; which makes use of the irregular estrus and the appearance of cornified cells in the vaginal epithelium in vitamin A-deficient animals. The method of assay to be selected is dependent on the nature of the vitamin A activity, that is, on whether this activity is due to vitamin A itself, to provitamin A or to both, in the substance to be examined. The present discussion of methods will cover (1) the biologic methods, including the test based on the growth of rats and the vaginal smear test, (2) the color test with antimony trichloride

and (3) the spectrographic method. The "growth" method is at present the official method of the U. S. Pharmacopeia³ and it will be described first.

BIOLOGIC METHODS OF ASSAY

Early studies showed that the growth of experimental animals is proportional to the vitamin A content of the diet. It was also shown that vitamin A is concerned with the prevention and cure of a specific pathologic condition.

The Growth Method.—The assay of vitamin A by the growth method was introduced as early as 1920.⁴ As developed and applied in various laboratories, this method embodies the following essential features: Young rats reared on a diet supplying vitamin A sufficient for growth and reproduction but not sufficient to permit excess storage are restricted to a diet which contains all the nutrients needed for growth except vitamin A. They are maintained on this diet long enough to reduce their body store of vitamin A until it will no longer support growth (preliminary, or depletion, period). The animals are then housed individually, and each is fed a specified daily allotment of the test material, as a supplement to the basal diet, throughout a period of several weeks (test period). During this time they are weighed at regular intervals, and there is a final weighing at the termination of the test. The increase in weight, or the growth response of the animal, obtained by subtracting from the final weight the weight on the day the first supplemental feeding was given, may then be used as a measure of the quantity of vitamin A ingested. Comparable, or matched, lots of animals given different quantities of vitamin A-containing material show growth graded to the dose. The relation between gain in weight and vitamin A intake is not linear but may be represented by a curve. This relationship has been rather extensively studied by Coward; she has derived formulas for the curve, which she calls the curve of response.⁵

The growth method has been refined and standardized until it is possible to obtain results with it that have as high a degree of accuracy as can be expected of procedures in which animals are used as reagents. The details of the method as applied by different investigators lend themselves, however, to a variety of interpretations, since rules acceptable to the majority have not been established. Consideration must be given not only to selection of a basal diet devoid of vitamin A and adequate in all other factors but to such questions as age, weight and dietary history of the experimental animals; acceptable weight limits of animals at the end of the depletion period; criteria for determining when the animals are depleted and suitable for the test; length of test period required for reliable results; relative significance of results with males and with females; effect of feeding the supplements in multiples of the daily dose at periodic intervals rather than in single daily doses; number of test animals required in an assay group assigned a given quantity of test material

3. United States Pharmacopeial Convention: The Pharmacopeia of the United States of America, Eleventh Decennial Revision, 1935.

4. Drummond, J. C., and Coward, Katharine H.: Researches on the Fat-Soluble Accessory Factor (Vitamin A): VI. Effect of Heat and Oxygen on the Nutritive Value of Butter, *Biochem. J.*, **14**: 734 (no. 6) 1920. Osborne, T. B., and Mendel, L. B.: Nutritive Factors in Plant Tissues: IV. Fat-Soluble Vitamins, *J. Biol. Chem.*, **41**: 549 (April) 1920.

5. Coward, Katharine H.; Key, Kathleen M.; Dyer, F. J., and Morgan, Barbara G. E.: The Determination of Vitamin A, *Biochem. J.*, **24**: 1952 (no. 6) 1930. Coward, Katharine H.: The Relation of the Growth Response to Dose of Vitamin A: Confirmation of a Curve Relating Response to Dose of Vitamin A Given, *ibid.*, **28**: 865 (no. 3) 1934. Coward, Dyer, Morton and Gadham.¹⁴

1. Wilke, Carl: Vitamin A Has Been Synthesized by Kuhn, Indust. & Engin. Chem., News, Ed. **29**: 291 (July 10) 1937. Holmes and Corbet.¹⁶

2. League of Nations, Health Organisation: Second Conference on Vitamin Standardisation, London, June 12-14, 1934, *Quart. Bull. Health Organ., League of Nations* **3**: 428 (Sept.) 1934.

in order that the average gain in weight may be accepted as reliable; number of groups of experimental animals receiving graded doses of supplement required to establish the relation between vitamin A intake and gain in weight. Because most of these variables affect the accuracy of the results obtained, it seems advisable to consider the results reported in regard to them.

The vitamin A-free diet in most common use consists of casein extracted with a suitable fat solvent or subjected to prolonged heating⁶ to render it vitamin A-free, vitamin A-free starch, yeast to supply the water-soluble growth-promoting factors and a suitable salt mixture. Vitamin D may be supplied by irradiation of the oil, the starch or a portion of the yeast or through the daily administration of small quantities of irradiated cholesterol or ergosterol. Recently some investigators have added a vitamin A-free fat or oil carrying the growth-promoting unsaturated fatty acids.⁷ Linseed oil or corn oil may be used for this purpose.

The colony from which the experimental animals are obtained should be maintained on a diet containing enough vitamin A to support growth and reproduction but not enough to permit excess storage by the young. Otherwise the depletion period will be unduly long and the animals will be too large when depleted. The time required for depletion may be kept at a minimum by giving mother and young the vitamin A-free food during the lactation period⁸ or, if the mother's diet contains whole milk (powder), by substituting skimmed milk (powder) during some portion of the lactation period.⁹ Animals suitable for test purposes are described on the basis of weight at the time of weaning;¹⁰ or on the basis of weight at the end of the depletion period.¹¹ The best results seem to be obtained with animals weighing between 70 and 90 Gm. when depleted. Animals weighing more than 100 Gm. are generally considered unsuitable. Criteria for judging when the depletion period should be terminated cannot be given categorically but to a certain extent must be established by the investigator for the colony of animals with which he is working. The animals should show stationary or declining weight and may or may not have acquired ophthalmia. In any case, symptoms of extreme vitamin A deficiency should not be present.¹² The length of the test period used depends on the accuracy desired, the reliability increasing in general the longer the test is continued, at least up to eight weeks.¹³ Male and female test animals cannot be used interchangeably at all levels of vitamin A intake. At the low levels they show similar rates of gain, but at higher levels the males grow faster.¹⁴ Nine or ten animals in an assay group seem to be sufficient to give results that may be

considered reliable,¹⁵ although this number may vary somewhat according to the rate of gain¹⁶ and the sex of the animals, twice as many females as males being required for the same degree of reliability.¹⁷ The number of assay groups required to establish the relation between gain in weight and vitamin A intake depends on the reliability of the results from each group and the accuracy desired. Three points are naturally the least that can be used, and four or five are probably sufficient. The vitamin A supplements are generally specified in terms of the daily dose. The results seem to be the same, however, whether this is fed daily or in multiples of the daily dose at less frequent intervals.¹⁸

Interpretation of Results.—As already stated, the growth method was in use several years before the adoption of the International Standards of Reference for vitamins A, B, C and D. During that time several units were proposed for expressing vitamin A activity in terms of the measurements made. The one most extensively used was perhaps the Sherman, or the Sherman-Munsell, unit, sometimes called the rat-growth unit. This unit was defined as that amount (of vitamin A) which when fed daily (six times a week) just sufficed to support a rate of gain of 3 Gm. a week in a standard test animal (rat) during an experimental feeding period of from four to eight weeks.¹⁹ To obtain values in terms of this unit, it was customary to use at least three groups of comparable ("matched") test animals: one to receive a daily supplement of test material designed to support the standard rate of gain of 3 Gm. a week, one to receive a quantity of supplement somewhat less than this and the third to receive a quantity somewhat larger. At the end of the test the average gain in weight for each group was calculated, and a curve was drawn relating quantity of test food ingested to gain in weight. The quantity of test material required to support a gain in weight of 3 Gm. a week was then derived from this curve. The reciprocal of this value (expressed in grams) indicated the number of "rat growth" units of vitamin A per gram of material.

Although the rat growth unit was soon recognized as of little use for expressing absolute vitamin A values, the 3 Gm. a week rate of gain is often used as representative of the most reliable and most sensitive portion of the curve relating gain in weight of rats to vitamin intake.

Since adoption of the International Standards of Reference²⁰ for the vitamins it has been advisable to carry out biologic assays in such a way that the quantitative estimates derived from the results may be expressed in terms of international units rather than

6. Todhunter, E. N.: A Comparison of Heated Casein with Extracted Casein in the Basal Diet for the Determination of Vitamin A, *J. Nutrition* 13: 469 (May) 1937.

7. Evans, H. M., and Lepkovsky, Samuel: Vital Need of the Body for Certain Unsaturated Fatty Acids: III. Inability of the Rat Organism to Synthesize the Essential Unsaturated Fatty Acids, *J. Biol. Chem.* 99: 231 (Dec.) 1932.

8. Nelson, E. M.: Regulating the Storage of Vitamin A in Animals That Are to Be Used for the Determination of This Vitamin, *Science* 68: 212 (Aug. 31) 1928.

9. Unpublished data, United States Department of Agriculture, Bureau of Home Economics.

10. Nelson, E. M.: *U. S. Pharmacopeia*, 3.

11. Sherman, H. C., and Burtis, M. P.: Factors Affecting the Accuracy of the Quantitative Determination of Vitamin A, *J. Biol. Chem.* 78: 671 (Aug.) 1928.

12. Norris and Church, *U. S. Pharmacopeia*, 3.

13. Irwin, Margaret H.; Brandt, A. E., and Nelson, P. Mabel: Applications of Statistical Method to the Data of Vitamin Feeding Experiments: I. The per Cent Effect of Measured Variables, *J. Biol. Chem.* 88: 449 (Sept.) 1930. Sherman and Burtis.¹¹ Coward.¹⁶ Norris and Church.¹²

14. Coward, Katharine H.; Dyer, F. J.; Merton, R. A., and Gaddum, J. H.: The Determination of Vitamin A in Cod Liver Oils (a) Biologically, (b) Chemically, (c) Physically, with a Statistical Examination of the Results, *Biochem. J.* 25: 1102 (no. 4) 1931. Sherman and Burtis.¹¹

15. Sherman, H. C., and Batchelder, E. L.: Further Investigation of Quantitative Measurement of Vitamin A Values, *J. Biol. Chem.* 91: 505 (May) 1931. Coward, Dyer, Morton and Gaddum.¹⁶ Coward and Key.¹³

16. Coward, Katharine H.: The Influence of the Length of the Test Period on the Accuracy Obtainable in a Vitamin A Test, *Biochem. J.* 27: 445 (no. 2) 1933. Irwin, Brandt and Nelson.¹³

17. Coward, Katharine H.: Variation in Growth Response of Rats to Vitamin A Tests Compared with the Variation in Rats Growing Normally, *Biochem. J.* 26: 691 (no. 3) 1932.

18. Coward, Katharine H., and Key, Kathleen M.: Simplification of Vitamin Tests: The Effect of Giving Doses Half-Weekly for Vitamin A Tests, and Once Only for Vitamin D Tests, Instead of Giving Daily, *Biochem. J.* 28: 870 (no. 3) 1934.

19. Sherman, H. C., and Munsell, Hazel E.: The Quantitative Determination of Vitamin A, *J. Am. Chem. Soc.* 47: 1639 (June) 1925.

20. A detailed discussion of the selection of the international standard is given in a Special Report of the Medical Research Council, Information on the selection of a suitable solvent for the standard is included. This material, presented by Hume and Chick,²¹ has been summarized by E. V. McCollum (The Fat-Soluble Vitamins, in Luck, J. M., Annual Review of Biochemistry, Stanford University, Calif., Stanford University Press, 1936, p. 379).

in terms of "rat growth" units.²¹ Failure to give serious attention to the necessity of considering devices for making accurate comparisons with the international standards has in many instances led to the derivation of estimates that were far from the true values. Two methods of carrying out assays to obtain exact values in terms of international units have been suggested and described in detail.²²

Attempts have been made to derive a factor for converting vitamin A values expressed in Sherman or rat growth units to equivalent values expressed in international units.²² In this connection it is essential to emphasize the fact that the rat growth unit has no absolute value in terms of vitamin A and that, therefore, the derivation of a conversion factor is not a valid procedure. Any implied relationship must be considered as merely indicative. Values have appeared in the published literature from time to time, to be sure, but these have included extremes of 0.5 and 1.5 and there has been no basis for selecting one in preference to another. As a matter of fact, for some data reported one factor would probably more nearly serve the purpose, while in other cases the value at the other extreme might better be used.

The illogic of attempting to derive a single conversion factor of this sort may be illustrated by a consideration of factors suggested by results obtained during the past year²³ with positive control animals used in vitamin A assays on various products. All of these animals were given daily during a five week test period an amount of U. S. P. reference oil estimated to supply 1 international unit of vitamin A on the basis of the vitamin A value claimed for this oil. A total of sixty-five litters of animals were represented and all were drawn from the colony especially maintained for vitamin A assay work. Since in assays of this kind results with six to ten animals are generally considered sufficient to give an average that may be accepted as reliable, average gains in weight were derived for groups made up respectively of the controls taken from eight litters in order of the date of birth of the animals. The resulting average gains in weight for the eight groups established in this way were 18.0, 33.5, 30.3, 23.5, 16.4, 17.3, 31.3 and 28.3 Gm. By reference to a dose-effect curve for cod liver oil these were estimated to represent approximately the following vitamin A values in Sherman (Munsell) units: 0.9, 2.5, 2.1, 1.4, 0.8, 0.9, 2.2 and 1.9. On the basis of these results, therefore, the number of Sherman (Munsell) units equivalent to 1 international unit might be anything between 0.8 and 2.5. The use of another dose-effect curve might give slightly different values for Sherman units, of course, but the average gains in weight still stand as evidence of the

variability in the value of the "growth unit" even in tests carried out with presumably "standard" animals.

The Single-Feeding Growth Method.—The growth method as usually carried out involves the feeding of supplements at periodic intervals during several weeks and the estimation of quantitative values from the gain in weight of the animals during the test period. A somewhat modified form of this technic is the so-called single feeding method, in which a single dose of vitamin A-bearing material is given to vitamin A-depleted animals. In this case the survival of the animals is proportional to the vitamin A content of the material fed.²⁴ By measuring the area under the curve relating weight to survival days of animals fed different materials, it is possible to compare the vitamin A potency of these materials.²⁵ This method was recently successfully applied in the assay of pasture grasses.²⁶

The Vaginal Smear Method.—Female rats deprived of vitamin A show abnormal estrus and the presence of cornified cells in the vaginal epithelium.²⁷ This condition, which is one of the first and most pronounced evidences of a lack of vitamin A, clears up directly on the administration of vitamin A. Studies have been made to determine whether this phenomenon could be made the basis of a quantitative method.²⁸ Although the method developed has several distinct advantages, it does not commend itself for general adoption, because of the rather tedious procedure and the difficulty involved in interpreting the results quantitatively.²⁹

CHEMICAL AND PHYSICAL METHODS

As information was accumulated on the chemical and the physical characteristics of vitamin A, certain properties were identified that offered possibilities as bases for methods of quantitative analysis. The more extensively studied methods include the color tests, particularly the blue color reaction with antimony trichloride, and methods based on the selective absorption shown by vitamin A and vitamin A compounds. Although the reaction with antimony trichloride is no longer considered to have possibilities as the basis of a specific and dependable quantitative method, it may be used for certain routine purposes of control and therefore will be reviewed briefly. The spectrographic method of analysis holds promise of eventually becoming an accepted technic for quantitative work, although it is still largely in the investigative stage.

The color test and the spectrographic method do not apply to the determination of vitamin A activity due to the carotenoid precursor. No attempt will be made in the limited space allotted to this paper to discuss the blue reaction with antimony trichloride or the spectrographic technic as applied to the determination of the carotenoid precursors. The international unit,

21. The Permanent Commission on Biological Standardisation of the Health Organisation of the League of Nations at its 1931 conference (Report of the Conference on Vitamin Standards, London, June 17-20, 1931, Geneva, 1931, p. 68) adopted a specially prepared sample of carotene as the International Standard of Reference for vitamin A. A unit of vitamin A (international unit) was then defined as the vitamin A activity of 1 microgram of this international standard. During the interval from 1931 to 1934, when the next conference was held,² it was learned that the various forms of carotene do not possess the same vitamin A activity, β -carotene being more active than either α -carotene or γ -carotene. Accordingly, at the 1934 international conference a sample of pure β -carotene was adopted to replace the 1931 standard, which had been shown to be a mixture. The sample of β -carotene had been carefully assayed against the old standard, and from the average results from several laboratories, 0.6 microgram was accepted as equivalent to 1 microgram of the 1931 standard. The international unit of vitamin A is therefore the vitamin A activity of 0.6 microgram of pure β -carotene.

22. Daniel, Esther P., and Munsell, Hazel E.: Vitamin Content of Foods: A Summary of the Chemistry of Vitamins, Units of Measurement, Quantitative Aspects in Human Nutrition, and Occurrence in Foods. Misc. Pub. 275, United States Department of Agriculture, Bureau of Home Economics, 1937.

23. Unpublished data, Bureau of Home Economics, United States Department of Agriculture.

24. Sherman, H. C., and Cammack, M. L.: A Quantitative Study of the Storage of Vitamin A. *J. Biol. Chem.* **68**: 69 (April) 1926. Nelson, E. M.; Walker, Reed, and Jones, D. B.: Determination of Vitamin A by a Preventative Method. *J. Biol. Chem.* **92**: vi (June) 1931.

25. Sherman, H. C., and Toddhunter, E. N.: The Determination of Vitamin A Values by a Method of Single Feedings. *J. Nutrition* **8**: 347 (Sept.) 1934.

26. Hodgson, R. E., and Knott, J. C.: The Method of Single Feeding as Used in Measuring the Vitamin A Activity of Pasture Grass Artificially Dehydrated at Different Temperatures, *Am. Dairy Sc. A. West. Div.* 22d Annual Meeting Proc., 1936, p. 41.

27. Evans, H. M., and Bishop, K. S.: On the Existence of a Hitherto Unrecognized Dietary Factor Essential for Reproduction, *Science* **56**: 650 (Dec. 8) 1922.

28. Macy, Icie G.; Outhouse, Julia; Long, M. Louisa, and Graham, Alice: Human Milk Studies: 1. Technique Employed in Vitamin Studies. *J. Biol. Chem.* **73**: 153 (May) 1927. Coward, Katharine H.: The Influence of Vitamin A Deficiency on the Oestrous Cycle of the Rat. *J. Physiol.* **67**: 26 (Feb. 28) 1929. Coward, Katharine H.; Morgan, Barbara G. E., and Dyer, F. J.: 11. *ibid.* **69**: 349 (May) 1930.

29. Baummann, C. A., and Steenblock, Harry: The Vaginal Smear Method of Determining Vitamin A. *Science* **76**: 417 (Nov. 4) 1932.

on the other hand, is defined in terms of the international standard, which is β -carotene. Thus it is not possible to interpret results from the color test or the spectrographic technic directly in terms of international units by comparison with results of concurrent tests on the international standard. It is necessary to use conversion factors giving the relation between the potency of vitamin A expressed in international units as determined by the biologic method and the constant for vitamin A of the chemical or physical property being measured. In several reports in which conversion factors are discussed, values determined by the biologic method and expressed in terms of international units are referred to as "biologic values." This expression should not be confused with the Sherman, or rat growth, unit of vitamin A, which is sometimes called the biologic unit.

The Color Test with Antimony Trichloride.—As early as 1920³⁰ it was suggested that the color reaction of cod liver oil with concentrated sulfuric acid might be related to the vitamin A content. Systematic investigations soon identified several color reagents, including arsenic trichloride,³¹ which gave a brilliant ultramarine color with cod liver oil. The evidence obtained seemed to support the conclusion that this reaction was specific for vitamin A. A number of the color reagents were investigated by Carr and Price,³² who gave particular attention to conditions necessary for the determination of quantitative relationships. Of the reagents studied, antimony trichloride in chloroform solution was the most satisfactory. The authors gave detailed directions for carrying out the test, and for this reason it is often referred to as the Carr-Price color test. As a quantitative method it has been used chiefly with liver oils, concentrates and extracts. In applying the test to the assay of oils,³³ a 20 per cent solution of the oil in chloroform is prepared at a given temperature, usually 20 C. Of this solution 0.2 cc. is placed in a glass cell having an internal measurement of 1 cm., and the cell is placed in a colorimeter or tintometer designed for matching the color against standard glasses. Two cc. of antimony trichloride reagent (antimony trichloride in dry chloroform saturated at 20 C.) is added so that the two solutions mix. The blue color develops rapidly and then fades. Readings are taken as the color develops, the point of maximum intensity being taken as the correct value. The values read are usually expressed as blue units, or Lovibond blue units.

Intensive studies of the antimony trichloride reaction with oils have shown that the color produced is not proportional to the amount of oil used, i.e., to the concentration of vitamin A.³⁴ The color reaction is not a linear function of vitamin A concentrations of oil. Furthermore, there seems to be no uniformity in the type of curve relating concentration of oil to color produced.³⁵ Results obtained with the unsaponifiable fraction, on the other hand, give a more nearly linear

relationship.³⁶ These values also check satisfactorily with values obtained by the biologic method.³⁷

Certain plant pigments, including carotene, are known to give a blue color reaction with antimony trichloride. The reaction with carotene may be differentiated from that with vitamin A by heating the solutions on a water bath at 60 C. The blue color with carotene will persist, while that with vitamin A changes to rose, violet-red or wine-red, according to the concentration of vitamin present.³⁸

The blue reaction with vitamin A is more stable at low temperatures³⁹ and may be stabilized by the addition of hydroquinone⁴⁰ or guaiacol.⁴¹ Certain other substances interfere with the reaction. A large number of these have been identified and tabulated according to the maximum quantity that may be present without masking the test.⁴²

Interpretation of Results.—The relation of the Lovibond blue unit to the Sherman unit of vitamin A has been variously given. The wide discrepancies in the following factors indicate the futility of attempting to select a conversion factor:

1 Sherman unit = 2.18 Lovibond blue units³⁵

10 Sherman units (eight week test) = 7.1 and 82 Lovibond blue units.⁴³

An attempt to establish a factor for interpreting results in terms of international units fares little better. The rich concentrate of vitamin A studied by Carr and Jewell⁴⁴ gave a value of 78,000 Lovibond blue units per gram and approximately 1.6×10^6 international units per gram, 1 Lovibond blue unit equals approximately 20 to 22 international units.

Other work⁴⁵ indicates a ratio of 20 to 1 for the vitamin A of a distilled oil, and for a natural oil the ratio is about 40 to 1. The crystalline vitamin A recently described by Holmes and Corbet⁴⁶ gave a blue value of 100,000 units per gram and has since been reported to contain approximately 3×10^6 international units per gram, giving a relation of 1 blue unit equals 30 international units.

Spectrographic, or Absorption, Methods.—Use of the spectroscope has recently come to the fore as an important method of analysis, especially for the identification of substances occurring in such small quantities as to defy the ordinary methods of quantitative chemical

30. Rosenheim, Otto, and Drummond, J. C.: On the Relation of the Lipochrome Pigments to the Fat-Soluble Accessory Food Factor, *Lancet* 1: 862 (April 17) 1920.
31. Rosenheim, Otto, and Drummond, J. C.: A Delicate Colour Reaction for the Presence of Vitamin A, *Biochem. J.* 19: 753 (no. 4) 1925.
32. Carr, T. H., and Price, E. A.: Colour Reactions Attributed to Vitamin A, *Biochem. J.* 20: 497 (no. 3) 1926.
33. Antimony Trichloride Test for Cod Liver Oil, *British Pharmacopoeia*, 1932, p. 596.
34. Wokes, F., and Willmott, S. G.: A Study of Antimony Trichloride as a Possible Quantitative Reagent for Vitamin A, *Analyst* 52: 515, 1927.
35. Norris, E. R., and Danielson, I. S.: Comparison of Biological and Colorimetric Assays for Vitamin A as Applied to Fish Oils, *J. Biol. Chem.* 83: 469 (Aug.) 1929. Norris and Church.³⁶
36. Norris, E. R., and Church, A. E.: A Study of the Antimony Trichloride Color Reaction for Vitamin A: II. The Dilution Curve of Cod Liver Oil with Antimony Trichloride Reagent, *J. Biol. Chem.* 87: 139 (May) 1930.
37. Norris, E. R., and Church, A. E.: A Study of the Antimony Trichloride Color Reaction for Vitamin A: I. *J. Biol. Chem.* 85: 477 (Jan.) 1930.
38. Smith, E. L., and Hazley, Violet: The Reaction of Antimony Trichloride with Cod Liver Oil and Its Unsaponifiable Fraction, *Biochem. J.* 24: 1942 (no. 6) 1930. Coward, Dyer, Morton and Gaddum.⁴¹ Wise and Heyl.³⁷
39. Wise, E. C., and Heyl, F. W.: Vitamin A Colorimetric and Biological Assay, *J. Am. Pharm. A.* 21: 1142 (Nov.) 1932. Andersen, A., and Nightingale, E.: Test for Vitamin A in Margarine, Butter, and Other Fatty Foods, *J. Soc. Chem. Ind.* 48: 139T (June 14) 1929. Coward, Dyer, Morton and Gaddum.⁴¹ Norris and Church.³⁶ Smith and Hazley.³⁸ Lathbury.⁴⁵
40. Andersen, A. C., and Levine, V. E.: Reaction to Differentiate Vitamin A from Carotene by Means of Antimony Trichloride, *Proc. Soc. Exper. Biol. & Med.* 32: 737 (Feb.) 1935.
41. Ender, Fredrik: The Reaction of Fish-Liver Oils with Antimony Trichloride, *Biochem. J.* 26: 1118 (no. 4) 1932.
42. Huston, R. C.; Lightbody, H. D., and Ball, C. D., Jr.: Some Biochemical Relations of Phenols: II. The Effect of Hydroquinone on the Vitamin A Content of Stored Oils, *J. Biol. Chem.* 79: 597 (Oct.) 1927.
43. Rosenthal, Eugene, and Erdelyi, John: Some Remarks Concerning the New Colour Reaction of Vitamin A, *Biochem. J.* 29: 2112 (Sept.) 1935.
44. Corbet, Ruth E.; Geisinger, Helen H., and Holmes, H. N.: Substances Which Interfere with the Antimony Trichloride Test for Vitamin A, *J. Biol. Chem.* 100: 657 (May) 1933.
45. Norris, E. R., and Church, A. E.: A Study of the Antimony Trichloride Color Reaction for Vitamin A: V. Evaluation of a Colorimetric Unit on the Basis of the Biological Unit for Vitamin A, *J. Nutrition* 5: 495 (Sept.) 1932.
46. Carr, E. H., and Jewell, William: Characteristics of Highly Active Vitamin A, *Nature* 131: 92 (Jan. 21) 1933.
47. Lathbury, Kathleen C.: Vitamin A Determination Related Between the Biological, Chemical and Physical Methods of Test, *Biochem. J.* 28: 2254 (no. 6) 1934.
48. Holmes, H. N., and Corbet, Ruth E.: A Crystalline Vitamin A Concentrate, *Science* 85: 103 (Jan. 22) 1935.

analysis. If a substance shows selective absorption with characteristic maximums, it is a relatively simple matter to detect its presence and by determining the degree of absorption to obtain an estimate of the quantity present. This method has been applied in the case of vitamin A and vitamin A compounds with considerable success and promises to become an accepted method of analysis. For the most part the conventional types of equipment suitable for determining and measuring absorption in the visible and in the ultraviolet have been used, and the results have accordingly been referred to as spectroscopic, spectrographic or spectrophotometric measurements, according to the instrument employed.

Absorption of the Blue Antimony Trichloride-Vitamin A Compound.—The compound formed by antimony trichloride with the vitamin A of liver oils shows two absorption bands, with maximums near 606 and 572 millimicrons, respectively.⁴⁷ In the case of concentrates there may be considerable shift toward the red end of the spectrum, the maximums appearing near 617 and 583 millimicrons, although on dilution to give a vitamin A potency equivalent to that of cod liver oil the shift is not apparent.⁴⁸ It has been suggested that liver oils may contain two chromogens giving a blue color with antimony trichloride, one showing the maximum at 606 millimicrons and the other the maximum at 572 millimicrons.⁴⁹ Under suitable conditions both of these bands are present. It is possible, however, by changing the concentration or the temperature or by adding certain chemicals to alter these conditions so that either one or the other of these bands, but not both, is shown.⁵⁰ There is still some difference of opinion as to the specificity of these bands for vitamin A.⁵¹

The difference in behavior of the 617 millimicron and the 583 millimicron bands of the concentrates may be construed to indicate lack of homogeneity in vitamin A concentrates unless a satisfactory explanation of the difference is found.⁵²

Absorption of Vitamin A.—In 1925 Takahashi⁵³ described a highly active vitamin A preparation (biosterin) showing selective absorption in the ultraviolet with a maximum in the region of 320 millimicrons. Subsequent studies on oils and concentrates showed a high correlation between the vitamin A content as determined by the biologic method and absorption

in the region having a maximum at 328 millimicrons.⁵⁴ In the case of oils, however, not all of the absorption at 328 millimicrons is due to vitamin A. The extraneous absorption varies from oil to oil and in one case was shown to be as high as 40 per cent.⁵⁵ Reliable data therefore are obtained only by making the test with the unsaponifiable fraction. Although the measurement of absorption in the ultraviolet gives a good indication of vitamin A activity, there are still certain discrepancies that must be explained before the method can be generally adopted.⁵⁶

Application of the Spectrographic Method to the Quantitative Estimation of Vitamin A.—As implied in the foregoing discussion, the spectrographic method for vitamin A involves measurement of absorption in the region of the spectrum where vitamin A or vitamin A compounds show selective absorption. The measurement is usually made at or near the maximum of the particular absorption band used. This value expressed as a fraction of the value for 100 per cent vitamin A then indicates the proportion of vitamin A present. The validity of this relationship depends on whether Beer's law holds for all concentrations of vitamin A; i. e., whether the ratio of the coefficient of absorption to vitamin A concentration is a constant for all concentrations of vitamin A. In the application of the test this has been assumed to be the case.

It has become customary in work with vitamin A to determine the coefficient of absorption on the basis of a 1 per cent solution of 1 cm. depth. The values are usually expressed as $E_{1\%}^{1\text{cm.}}$, where E represents the optical constant, $\log \frac{I_0 \text{ (intensity of incident light)}}{I \text{ (intensity of emergent light)}}$. The wavelength at which the determination is made must be indicated. This value is sometimes referred to as the specific absorptive index or the extinction coefficient.

When the extinction coefficient has been determined either for direct absorption in the ultraviolet in the region from 320 to 330 millimicrons or for the antimony trichloride blue compound at either of the two maximums specific for this compound, the next problem is to convert the reading into vitamin A potency in terms of international units. To do this it is necessary to know the value for international units per gram divided by the index coefficient for 100 per cent vitamin A, which is the factor by which the coefficient of absorption must be multiplied to obtain the vitamin A potency in international units. Reference has already been made to the rich concentrate of vitamin A described by Carr and Jewell.⁴⁴ This substance was shown to have coefficients of absorption for the blue reaction of $E_{1\%}^{1\text{cm.}}$ 617 millimicrons = 5,000 and $E_{1\%}^{1\text{cm.}}$ 580 millimicrons = 2,600 and a coefficient of absorption for absorption in the ultraviolet of $E_{1\%}^{1\text{cm.}}$ 328 millimicrons = 1,600. Six ten-thousandths of a milligram contained slightly more than 1 international unit; i. e., the substance had a biologic

47. Drummond, J. C., and Morton, R. A.: Observations on the Assay of Vitamin A, *Biochem. J.* **23**: 785 (no. 4) 1929. Coward, Katharine H.; Dyer, F. J., and Morton, R. A.: The Determination of Vitamin A in Cod Liver Oils, (a) Biologically, (b) Chemically, (c) Physically, with a Statistical Examination of the Results: 11. Further Evidence That the Intensity of Absorption at 328 Millimicrons Gives the Best Agreement with the Biological Measure of Vitamin A in Cod Liver Oils, *ibid.* **26**: 1593 (no. 5) 1932. Morton, Heilbron and Thompson.⁴⁵ Coward, Dyer, Morton and Gaddum.⁴⁴

48. Morton, R. A.; Heilbron, I. M., and Thompson, Albert: Spectrographic Data Concerning Vitamin A and Liver Oils, *Biochem. J.* **25**: 20 (no. 1) 1931. Heilbron, I. M.; Heslop, R. N.; Morton, R. A.; Webster, E. T.; Rea, J. L., and Drummond, J. C.: Characteristics of Highly Active Vitamin A Preparations, *ibid.* **26**: 1178 (no. 4) 1932.

49. Gillam, A. E., and Morton, R. A.: The Antimony Trichloride Colour Test and the Ultraviolet Absorption of Liver Oils and Concentrates, *Biochem. J.* **25**: 1346 (no. 4) 1931. Heilbron, I. M.; Gillam, A. E., and Morton, R. A.: Specificity in Tests for Vitamin A: A New Conception of the Chromogenic Constituents of Fresh and Aged Liver Oils, *ibid.* **25**: 1352 (no. 4) 1931. Brode and Magill.⁵⁰ Morton.⁵²

50. Brode, W. R., and Magill, Mary A.: A Critical Study of the Antimony Trichloride Colour Test for Vitamin A, *J. Biol. Chem.* **92**: 87 (June) 1931. Morton.⁵²

51. Magill, Mary A., and Brode, W. R.: A Comparison Between the Spectrophotometric and Biological Assay for the Vitamin A Content of Fish Liver Oils, *Ohio J. Science* **33**: 127 (March) 1933. Coward, Dyer, Morton and Gaddum.⁴⁴ Drummond and Morton.⁴⁵ Gillam and Morton.⁴⁹ Brode and Magill.⁵⁰ Morton.⁵² Morgan, Edisbury and Morton.⁵⁶

52. Morton, R. A.: The use of 7-Methyludole in the Antimony Trichloride Colour Test for Vitamin A, *Biochem. J.* **26**: 1197 (no. 4) 1932.

53. Takahashi, K.; Nakamiya, Z.; Kawakami, K., and Kitasato, T.: On the Physical and Chemical Properties of Biosterin (a Name Given to Fat-Soluble A) and on Its Physiological Significance, *Inst. Phys. Chem. Res. (Tokyo) Sc. Papers* **3**: 81 (no. 32) 1925.

54. Morton, R. A., and Heilbron, I. M.: The Absorption Spectrum of Vitamin A, *Biochem. J.* **22**: 987 (no. 4) 1928. Macwalter, R. J.: Some Factors Which Affect the Assay of Vitamin A by the Spectrographic Method, *Biochem. J.* **28**: 472 (no. 2) 1934. Coward, Dyer, Morton and Gaddum.⁴⁴ Drummond and Morton.⁴⁵

55. Crews, S. K., and Cox, S. J.: The Relationship between the Carr Price Value and the 328 Millimicron Absorption Coefficient of Preparations Containing Vitamin A, *Analyst* **59**: 85 (Feb.) 1934. Coward, Dyer, Morton and Gaddum.⁴⁴

56. Morgan, R. S.; Edisbury, J. R., and Morton, R. S.: A Discrepancy Between Biological Assays and Other Methods of Determining Vitamin A: I, *Biochem. J.* **29**: 1645 (July) 1935. Pritchard, Harry; Wilkinson, Harry; Edisbury, J. R., and Morton, R. A.: 11. *ibid.* **31**: 258 (Feb.) 1937. Wilkie.⁵⁰

value between 1.6 and 2 million units per gram. On the basis of these constants the ratio

$$\frac{\text{biologic value (international units per gram)}}{E_{1\text{ cm.}}^{1\%} 328} = \frac{1.6 \text{ to } 2 \text{ million international units per gram}}{1,600}$$

would give a factor of approximately 1,250.

Other factors have been similarly determined on the basis of measurements made on rich concentrates of vitamin A. Those proposed up to 1935 are reviewed by Chick and Hume,⁵⁷ who give the accepted value for the conversion factor as 1,600. A more recent report by Hume⁵⁸ indicates that this factor is still the most satisfactory one to use.

From results of assays of fish liver oils by the biologic and spectrographic methods, Emmett and Bird⁵⁹ stated the conclusion that the ratio of

$$\frac{\text{international units per gram}}{E_{1\text{ cm.}}^{1\%} 328 \text{ millimicrons}}$$

for vitamin A is "close to 2,000." In the case of concentrates the conversion factor varied with the quantity of alkali used in saponification.

Reference has already been made to the report of Holmes and Corbet⁴⁶ on the separation of crystalline vitamin A. This substance gave a value for $E_{1\text{ cm.}}^{1\%}$ 328 millimicrons of 2,000. If the biologic value proves to be 3,000,000 international units, as tentatively reported, the conversion factor would be nearer 1,500 than 1,600.

The validity of the choice of the factor 1,600 or, for that matter, of any fixed factor for converting spectrographic readings to international units has been discussed by Wilkie.⁶⁰

The determination by British investigators of the vitamin A in butter may be cited as an example of the application of the spectrographic method to the quantitative estimation of vitamin A.⁶¹

Special Instruments.—The type of equipment generally used in spectrophotometric work is expensive and requires, furthermore, a skilled operator to obtain accurate results. Early in 1933 Adolph Hilger, Ltd., London, placed on the market a simplified form of the spectrophotometer, called the vitameter. This instrument, which has been described by Irish,⁶² is made especially for the assay of vitamin A and is calibrated to give $E_{1\text{ cm.}}^{1\%}$ 328 millimicron values directly. A study of results obtained with the vitameter has been made by Wilkie,⁶⁰ who recommended that persons using the instrument interpret the readings by means of a dilution curve determined for the reference cod liver oil.

A modified spectrophotometer for the assay of vitamin A was recently described by McFarlan, Reddie and Merrill.⁶³ This instrument is small and compact,

is claimed to be easy to operate and to give results in a minimum of time, about one and one-half minutes being required for a reading. The readings are given directly for $\log \frac{I_0}{I}$ at 330 millimicrons, the wavelength of the monochromatic light used. A value of 1.32 for $E_{1\text{ cm.}}^{1\%}$ 330 millimicrons for the U. S. P. reference cod liver oil was obtained. On the basis of 3,000 international units per gram given for this oil, the conversion factor for changing readings to international units was derived as 2,270.

FOOD SOURCES OF VITAMIN A

The study of food sources of vitamin A claimed the attention of investigators from the very time of discovery of this vitamin. As a result, considerably more data have accumulated on the occurrence of this factor in foods than is the case with some of the other vitamins. This material has been brought together in a publication recently issued by the United States Department of Agriculture²² and will not be reviewed in detail here.

Foods are often classified from the standpoint of vitamin potency as fair, good or excellent sources, without any clear indication as to the actual meaning of these terms. In order to have uniform terminology in the Bureau of Home Economics for expressing relative significance of foods as sources of vitamins, these qualitative terms have been tentatively defined by limiting values expressed in Sherman units per hundred grams. The bases of the definitions are given here so that there may be no uncertainty as to the meaning of the text that follows. A food source containing 19 or less Sherman units of vitamin A per hundred grams was rated an insignificant source. From 20 to 99 units was considered fair; from 100 to 999 units, good; from 1,000 to 10,000 units, excellent, and over 10,000 units, outside the class of an ordinary food. The limiting value for excellent was selected on the basis of the richest food sources. The lower limit for good was then chosen so that foods in this class would supply a significant proportion of the day's requirement. These descriptive terms should not be interpreted too categorically, for it is necessary to take into account the quantity of the food usually eaten.

In considering quantitative values it is essential to remember that a single value allotted to any food must be treated as a selected representative value within the range of variation of different samples. The more the vitamin activity of foods is studied the more patent it becomes that in most cases there exists a wide variation from sample to sample even when the effective factors are controlled as far as possible.

In foods of plant origin there seems to be a direct parallel between greenness—chlorophyll content—and vitamin A activity. Although it is known that plant tissue owes its vitamin A activity to the presence of carotene, the relation, if any, between the presence of chlorophyll and the formation of carotene is not yet clear.

Thin green leaves are among the best sources of vitamin A, many of the fresh leaves assaying well over 1,000 units (Sherman) per hundred grams and some even as high as from 20,000 to 30,000 units. The parallelism between vitamin A content and greenness is made more apparent by a study of the relative vitamin A content of green and of bleached leaves from the same plant. The outer green leaves of iceberg lettuce, which are usually removed before the head is offered to the consumer, have been shown, for instance, to be from thirty to forty times as rich in vitamin A

57. Hume, E. Margaret, and Chick, Harriette: Reports on Biological Standards: IV. The Standardisation and Estimation of Vitamin A. Medical Research Council, Special Report Series, no. 202, London, His Majesty's Stat. Off., 1935.

58. Hume, E. M.: Estimation of Vitamin A, *Nature* **139**: 467 (March 13) 1937.

59. Emmett, A. D., and Bird, O. D.: Comparative Biological Value of Vitamin A as an Alcohol and Ester, *J. Biol. Chem.* **119**: xxxi (June) 1937.

60. Wilkie, J. B.: Report on Vitamin A: Determinations with the Hilger Vitameter, *J. A. Off. Agric. Chem.* **20**: 208 (May) 1937.

61. Morton, R. A., and Heilbron, I. M.: Vitamin A of Butter. *Biochem. J.* **24**: 870 (no. 4) 1930. Gillam, A. E.; Heilbron, I. M.; Morton, R. A.; Bishop, Gerald, and Drummond, J. C.: Variations in the Quality of Butter, Particularly in Relation to the Vitamin A, Carotene, and Xanthophyll Content as Influenced by Feeding Artificially Dried Grass to Stall-Fed Cattle. *ibid.* **27**: 878 (no. 5) 1933. Gillam, A. E.; Heilbron, I. M.; Ferguson, W. S., and Watson, S. J.: Variations in the Carotene and Vitamin A Values of the Milk Fat (Butter) of Cattle of Typical English Breeds, *ibid.* **30**: 1728 (Sept.) 1936.

62. Irish, F. W.: Report on Vitamin A: Determinations with the Hilger Vitameter, *J. A. Off. Agric. Chem.* **19**: 244 (May) 1936.

63. McFarlan, R. L.; Reddie, J. W., and Merrill, E. C.: A New Photoelectric Method for Measuring Vitamin A, *Indust. & Engin. Chem.* **29**: 324 (July 15) 1937.

as the inner "bleached" leaves, which make up the head. The outer green leaves of a head of young cabbage are much higher in vitamin A content than the inner white leaves.

Other types of green vegetables having a high vitamin A potency include green seeds and seed foods such as peas and green snap beans, fleshy vegetables such as green peppers, and green stems such as asparagus, broccoli stalks and green celery, although these products are not as rich as the green leaves. Here again there is loss of vitamin A value with loss in green color, since bleached celery stalks contain little, if any, of the vitamin.

In many plant products vitamin A activity may be indicated by the yellow color of the carotene. Of the vegetables the most notable examples are carrots and sweet potatoes, both of which are excellent sources. A yellow color is especially valuable in detecting fruits that contain vitamin A, such as apricots, yellow peaches and bananas. When there is a yellow and a white variety of a given species, the yellow variety invariably has a higher vitamin A value than the so-called white variety. For example, yellow peaches and yellow tomatoes are good sources, whereas the corresponding white varieties are fair or insignificant sources. A yellow color cannot be taken as an infallible guide to vitamin A activity, however, since there are yellow plant pigments other than carotene.

Seeds such as the cereal grains, nuts and legumes are, with the exception of those having considerable green and yellow color, poor sources of vitamin A. Yellow corn—corn with a yellow endosperm—is the most important vitamin A food in this group.

A red color is sometimes mentioned as a guide to vitamin A content. It is true that such foods as red tomatoes and red peppers may be good sources. In these particular cases, however, it must be recalled that these products were green before they were red. On the whole, the association of a red color with high vitamin A content is probably more fortuitous than significant and should not be taken as anything more than indicative.

Thus a green or yellow color in foods of plant origin has come to be associated with high vitamin A activity, a rich green color indicating perhaps a relatively higher value than a yellow color.

Of the foods of animal origin, eggs, whole milk and milk products are the important sources, eggs having a rating of excellent, whole milk good and milk products of good or excellent, according to the proportion of milk fat they contain. Milk, however, since it is consumed in fairly large quantities, may be a more important source than its rating on the basis of units of vitamin A per hundred grams would imply.

Normally the cow derives her vitamin A entirely from plant material and the hen largely from the same source. Both carotene and vitamin A are secreted in milk and eggs, although the proportion of carotene to vitamin A is usually small.

The animal body does not seem to be capable of synthesizing vitamin A or the precursor carotene but must depend on its food for the needed supply. It is only reasonable to expect, therefore, that the vitamin A activity of such products as milk and eggs would vary according to the quantity of vitamin A in the diet of the respective species. There is ample evidence indicating that these products may vary between wide limits. This variability is not as great, however, as might be the case if the body were not capable of storing large

quantities of vitamin A which may be released gradually during periods of low vitamin A intake, such as the period of winter feeding. That there is a gradually diminishing output of vitamin A during such periods rather than a sharp drop has been shown by the studies made by Fraps and his co-workers.⁶⁴ On the other hand, when the intake is increased there is a sharp rise in output unless the body store has been unduly depleted.

The total quantity of vitamin A put into the egg or the milk is small compared with the total quantity ingested by the respective species. There also seems to be a maximum value beyond which the vitamin A potency of milk, at least, cannot be raised.⁶⁵ Under similar feeding conditions the butter fat from different breeds of cows shows the same vitamin A activity, although the ratio of carotene to vitamin A may vary from breed to breed.⁶⁶

The relation between the color of the egg and the vitamin A content is often questioned, color referring to the yolk and not to the shell, since the latter is a breed characteristic and has nothing to do with nutritive value. In eggs available on the market at present, the color of the yolk is of little value as a basis for the judging of vitamin A potency. If the hen has derived her vitamin A supply from green feed or yellow corn, the yolks of the eggs will be deep yellow and rich in vitamin A. On the other hand, if the diet of the hen has contained cod liver oil and the hen has not had access to green or other pigmented food, the egg yolks may be light in color though rich in vitamin A.

Variability in the vitamin A content of milk and eggs from the standpoint of food value is perhaps not as serious a problem now as it might have been, since under present day feeding practices there is not such a wide seasonal variation in the vitamin A content of the diet of dairy cows and of poultry as existed formerly. Liver might also be included in a categorical list of foods rich in vitamin A, since it is one of the richest food sources. As Sherman⁶⁷ has pointed out, however, this product can hardly be considered an important source since its production is conditioned by the demand for other meat and therefore could not be increased to supply the quantity needed to make it a regular constituent of the diet.

A consideration of the importance of various untreated foods is a small part of the story of the food sources of any vitamin. A natural food may be a perfectly good source of a vitamin and yet before it comes to the table be subjected to such treatment that little or none of this factor is left. Vitamin A is less likely, perhaps, to be lost or inactivated during procedures of manufacture and preparation at home than some of the other vitamins, since it is fairly stable to heat and not appreciably soluble in water. It is destroyed, however, by oxidation, and foods that are heated for long periods show appreciable loss of vitamin

64. Fraps, G. S.; Copeland, O. C., and Treichler, R.: *The Vitamin A Requirements of Dairy Cows*, Bull. 495, Texas Agricultural Experiment Station, 1934. Sherwood, R. M., and Fraps, G. S.: *The Amount of Vitamin A Potency Required by Hens for Egg Production*, Bull. 493, Texas Agricultural Experiment Station, 1934.

65. Watson, S. J.; Bishop, Gerald, and Drummond, J. C.: *The Relation of the Colour and Vitamin A Content of Butter to the Nature of the Ration Fed: I. Influence of the Ration on the Yellow Colour of the Butter*, *Biochem. J.* 28: 1076 (no. 3) 1934.

66. Wilbur, J. W.; Hilton, J. H., and Hauge, S. M.: *The Vitamin A Activity of Butter Produced by Guernsey and Ayrshire Cows*, *J. Dairy Sci.* 16: 153, 1933. Moore, Thomas: *Vitamin A and Carotene: IX. Notes on the Conversion of Carotene to Vitamin A in the Cow*, *Biochem. J.* 26: 1 (no. 1) 1932. Booth, R. G.; Kon, S. K., and Gillan, A. E.: *The Relative Biological Efficiencies of the Vitamin A and Carotene of Butter*, *ibid.* 28: 2169 (no. 6) 1934. Watson, Bishop and Drummond.

67. Sherman, H. C.: *Chemistry of Food and Nutrition*, ed. 5, New York, The MacMillan Company, p. 366.

A potency. It is not affected at the temperature of boiling water, so that foods cooked by boiling retain their vitamin A potency well. Canned foods have practically the same vitamin A value as the corresponding fresh foods. Canned products that have been stored for as long as from nine months to a year and in some cases for even longer periods still retain a large portion of their vitamin A potency.

The storing of foods in the frozen state offers one of the best methods of retaining the maximum vitamin value. The vitamin A value of frozen foods is for all practical purposes the same as that of the fresh products; provided, of course, that this statement is construed to apply to the frozen product or the defrosted product immediately after defrosting, since there may be a rapid loss of vitamin A value if the defrosted food is allowed to stand.

Dried, or dehydrated, foods show considerable loss in vitamin A content due, undoubtedly, to oxidation of the vitamin during the drying process. Dried products may show a further loss during storage.

Most foods in their natural state that are susceptible of storage for any length of time may be stored as long as from nine months to a year without serious loss of vitamin A value, and any loss taking place is very gradual.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

H. A. CASTLE, Secretary.

HANOVIA ULTRA SHORT WAVE GENERATOR MODEL #2700 ACCEPTABLE

Manufacturer: Hanovia Chemical & Mfg. Co., Chestnut Street and N. J. R. R. Avenue, Newark, N. J.

This Hanovia Short Wave Heat Generator, Model #2700, is designed for medical and minor surgical procedures. Standard equipment with this semiportable unit includes cuff and induction coil electrodes and various surgical accessories. Sufficient current is provided, according to the firm, for the electrosurgical procedures requiring cutting, coagulating and desiccating currents. When packed for shipping, the unit weighs 145 pounds.

The machine has a two-tube circuit with a fixed wavelength of about 14 meters. The patient circuit is inductively coupled.

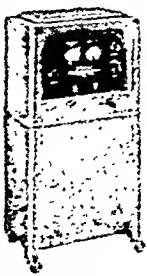


Fig. 1.—Hanovia ultra short wave generator, model #2700.

Two variable air-spaced condensers, one in each patient's terminal, are used for tuning this circuit. One control tunes the two branches of the patient's circuit simultaneously. The unit is so arranged that the operating voltages to the filament, plate and grid of the oscillating tubes can be adjusted to line voltage variations between 100 and 140 volts.

A serial switching arrangement is provided for the filament and plate circuits of the tubes.

The current is consequently first applied to the filament and then the plate permitting the use of a foot-switch in the plate circuit only, which is preferable for surgical uses. To reduce radio interference to a minimum, a choke is used in series with the primary side of the transformer.

The input, when operating at full load, is approximately 700 watts. The output is approximately 350 watts as measured by means of a 110 volt incandescent lamp load, galvanometer and photronic light sensitive cell.

A voltmeter is provided on the panel to permit the operator to correct any fluctuations in line voltage, so that the electronic emission from the tubes can be kept constant under all operating conditions. A milliammeter is provided in the plate circuit of the tubes to indicate when resonance is obtained in the patient circuit. The oscillating circuits are so coupled that the maximum plate current reading corresponds to direct

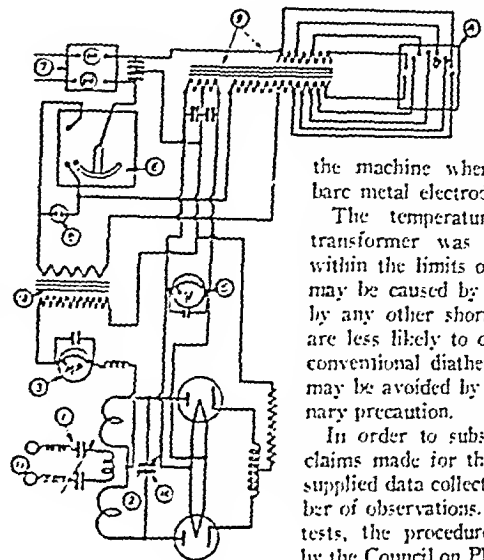


Fig. 2.—Schematic diagram of circuit.

resonance. The electrical characteristics are so designed, according to the firm, that it is impossible to overload

the machine when using cuff or bare metal electrodes.

The temperature rise of the transformer was found to come within the limits of safety. Burns may be caused by this machine as by any other short wave unit but are less likely to occur than when conventional diathermy is used and may be avoided by the use of ordinary precaution.

In order to substantiate heating claims made for this unit the firm supplied data collected from a number of observations. In making the tests, the procedure recommended by the Council on Physical Therapy was followed. A cannula was introduced at the midpoint of the thigh and inserted for a distance of

two inches or until the bone was encountered. Temperature readings were made by means of thermocouples inserted into the cannula and constructed of constantan and copper placed in hypodermic needles. The constant junction was kept at 0 C. by means of a vacuum bottle and crushed ice. The couples were calibrated against a mercury thermometer certified and calibrated by the National Bureau of Standards. Potential differences were read from a Leeds and Northrup portable potentiometer of requisite sensitivity. The accuracy was believed to be within one tenth of a degree.

Six experiments were run with the cuff technic, either $3\frac{1}{2}$ by 16 inches or $3\frac{1}{2}$ by 21 inches. These were placed from 7 to 9 inches apart, center to center. They were spaced with felt varying from five-eighths to seven-eighths inches in thickness. The temperature averages are given here.

In using the coil technic, four turns were placed about the thigh, the outer turns in contact, the inner turns 3 inches apart.

Averages of Six Observations, Cuff Technic

Deep Muscle		Oral	
Initial	Final	Initial	Final
99.3	105.2	98.4	98.7

Averages of Six Observations, Coil Technic

Deep Muscle		Oral	
Initial	Final	Initial	Final
98.5	106.1	98.2	98.6

One layer of Zonas oiled silk was placed over the skin. Wooden air-spacers were used. The area treated was approximately 8 inches from top to bottom. In four of the tests the oiled silk was replaced by felt spacing, five-eighths inch thick.

The unit was tried out clinically by an investigator acceptable to the Council and rendered satisfactory service when used in conditions amenable to heat therapy.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Hanovia Ultra Short Wave Generator, Model #2700, for inclusion in its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

THIAMIN CHLORIDE.—Crystalline vitamin B₁ hydrochloride. — 3'-(methyl-4-aminohydrochloride-pyrimidyl-5-methyl)-N-4'-methyl-5'-beta-hydroxyethyl-3'-chlorothiazole. — $C_{12}H_{17}ClN_4OS.HCl$.

Thiamin chloride may be prepared from natural sources such as yeast or rice polishings and also synthetically.

Actions and Uses.—See general article vitamin B₁ (thiamin chloride), Allowable Claims, New and Nonofficial Remedies, 1938, page 471.

Dosage.—Dosage statements should be based on the minimum daily vitamin B₁ requirement of from 50 to 75 international units for infants and from 200 to 300 international units for adults.

Thiamin chloride occurs as white, nearly odorless crystals. On exposure to air, the crystals absorb water. It is very soluble in water, slightly soluble in alcohol. The aqueous solution (1:20) is acid to litmus (pH about 3.5). The absorption spectrum of thiamin chloride has two maximums, 233 millimicrons, 267 millimicrons and two minimums, 215 millimicrons, 250 millimicrons. Thiamin chloride decomposes on melting at 248-250 C. (micromelting point apparatus, rate of heating 5 degrees per minute). A solution of thiamin chloride in distilled water responds to the tests for chloride, U. S. P. XI, page 449.

Dissolve approximately 0.1 mg. of thiamin chloride crystals in 0.05 cc. of distilled water, or take 0.05 cc. of thiamin chloride solution (1 per cent) and add 0.05 cc. of 1 per cent solution of Reinecke Salt; immediately starlike, white crystals will appear.

Moisten 0.01 Gm. of thiamin chloride, accurately weighed, with 2 drops of sulfuric acid and ignite; no weighable residue remains. Test for heavy metals is negative (U. S. P. XI method). To 0.1 cc. of a 5 per cent aqueous solution of thiamin chloride, add 1 cc. of sodium hydroxide solution and heat gently; the escaping vapors do not turn moistened red litmus blue (ammonium salts). To a solution of 0.01 Gm. of thiamin chloride in 2 cc. of distilled water, add 0.1 cc. of diluted hydrochloric acid and 0.1 cc. of barium chloride solution; no turbidity should develop in five minutes (sulfate).

Dry 0.1 Gm. of thiamin chloride at 80 C. under reduced pressure (1 mm. mercury) to constant weight over phosphorus pentoxide (approximately ten hours); the loss in weight is not over 5.0 per cent. Dissolve about 0.02 Gm. of thiamin chloride, previously dried to constant weight and accurately weighed, in 2 cc. of water. Add 1 drop of phenolphthalein indicator solution and titrate with one-hundredth normal sodium hydroxide to a pink color; not less than 2.8 cc. nor more than 3.0 cc. of one-hundredth normal sodium hydroxide is consumed per 0.010 Gm. of thiamin chloride. Weigh out, accurately, about 0.05 Gm. of thiamin chloride, previously dried to constant weight, and determine the nitrogen by a modification of the micro Kjeldahl-Gunning-Arnold method, using selenium instead of mercury (Pregl Quantitative Organic Microanalysis, second edition, P. Blakiston's Son & Co., 1930, p. 111). The nitrogen content is not less than 16.1 per cent nor more than 16.8 per cent. To about 15 mg. of thiamin chloride, previously dried to constant weight and accurately weighed, add 0.1 Gm. of potassium permanganate, 3 cc. of distilled water and 0.05 Gm. of sodium hydroxide. Heat the mixture for thirty minutes using a reflux condenser. Add sufficient hydrochloric acid, U. S. P. (not over 5 cc.), and heat until the solution is clear. Follow the Pregl method (Pregl Quantitative Organic Microanalysis, second edition, p. 144) for finishing the determination of sulfur in the platinum-Neubauer micro crucible. The sulfur content is not below 9.20 per cent and not above 9.8 per cent.

For assaying tablets or ampule solution, dissolve the material in a measured amount of water and dilute so that the solution contains between 1 microgram and 5 micrograms of thiamin chloride in 1 cc. Transfer 0.2 cc. of the solution to a 25 cc. graduate cylinder and add 0.05 cc. of 1 per cent potassium ferricyanide solution and 3 cc. of 10 per cent sodium hydroxide solution. Shake the mixture and then let it stand for one hour, add 12 cc. of isobutyl alcohol and shake the mixture vigorously for two minutes. Let the mixture settle; filter 10 cc. into a 10 cc. graduate cylinder. Withdraw 4 cc. in a 25 mm. test tube and compare the solution under filtered ultraviolet light with standards of thiamin chloride. These standards are prepared by accurately weighing out previously dried thiamin chloride and diluting it until 1 cc. may contain from 0.1 to 5 micrograms per cubic centimeter. Transfer 0.2 cc. of these solutions to a suitable nonfluorescent test tube. Oxidize with potassium ferricyanide in alkaline solution, extract with isobutyl alcohol and compare 4 cc. of these standards with the unknown. The amount of the unknown solution is then calculated from the thiamin chloride standard solution matching the unknown. The potency of the tablets is also controlled by biologic assays.

Vitamin B₁ Hydrochloride (Thiamin Chloride)-Merek.

—A brand of thiamin chloride-N. N. R.

—Manufactured by Merek & Co., Inc., Rahway, N. J., under license from Research Corporation, New York. U. S. patents applied for.

McKESSON'S HALIBUT LIVER OIL PLAIN, 11 cc. (See New and Nonofficial Remedies, 1938, p. 496).

The following dosage form has been accepted:

McKesson's Cod and Halibut Liver Oil.—A blend of cod and halibut liver oils, adjusted to have the potency per gram of 2,100 U. S. P. units vitamin A and 210 U. S. P. units of vitamin D.

NUPERCAINE-CIBA (See New and Nonofficial Remedies, 1938, p. 69).

The following dosage forms have been accepted:

Ampoules Solution of Nupercaine-Ciba, 1:1,500 in 0.5% solution of sodium chloride, 20 cc.

Ampoules Solution of Nupercaine-Ciba, 1:1,000, with epinephrine, 1:100,000, 2 cc.

Ampoules Solution of Nupercaine-Ciba, 1:1,000, with epinephrine, 1:100,000, 5 cc.

METYCAINE (See New and Nonofficial Remedies, 1938, p. 67).

The following dosage forms have been accepted:

Ampoules Solution Metycaine 10%, 2 cc.: Each 2 cc. contains metycaine 0.2 Gm. (3 grains) in distilled water. To be used for spinal anesthesia.

Ampoules Solution Metycaine 20%, 5 cc.: Each 5 cc. contains metycaine 1 Gm. (15½ grains) in distilled water. To be used for infiltration and regional anesthesia. The solution must be diluted before using.

NICOTINIC ACID AMIDE.—3:Pyridine Carboxylic Acid Amide.—The amide of nicotinic acid, C_6H_5ON .

Actions, Uses and Dosage.—Undetermined; the product is accepted for standardization and clinical experimentation only.

Nicotinic Acid Amide (3:Pyridine Carboxylic Acid Amide) SMACO.—A brand of nicotinic acid amide-N. N. R.

Manufactured by the S. M. A. Corporation, Cleveland. No U. S. patent or trademark.

Nicotinic acid amide occurs as fluffy, needle-like, white, odorless crystals with a slight bitter taste. The melting point is 133 C., when recrystallized from acetone. It is soluble in water, alcohol and hot benzene; only slightly soluble in ether.

Dissolve approximately 0.05 Gm. nicotinic acid amide in 5 cc. of hot water, add 0.05 Gm. of flavianic acid. Evaporate carefully to dryness and take up with 5 cc. of cold water. Centrifuge and wash the precipitate three times with 2.5 cc. portions of cold water. Recrystallize from 5 cc. of hot alcohol. Centrifuge and wash the crystals twice with 3 cc. portions of ether. Filter and dry the crystals: The melting point is found to be 269-270 C. (microscopic heating stage-heating time 30 degrees in one minute), $\alpha = 1.58$, $\beta = 1.70$, $\gamma = 1.8$.

Transfer 0.1 Gm. to a vessel and dry for five hours, at a reduced pressure 2 mm. of mercury in an Abderhalden dryer at 80 C. over phosphorus pentoxide; moisture content should not be more than 0.1 per cent. Incinerate 0.05 Gm. of nicotinic acid amide; no weighable residue remains. The test for halogens U. S. P. XI is negative. Weigh out, accurately, 5 mg. of nicotinic acid amide. Determine the nitrogen content after Pregl micro Dumas method; the nitrogen content should not be more than 23.2 per cent nor less than 22.6 per cent.

Council on Foods

THE COUNCIL ON FOODS HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

FRANKLIN C. BING, Secretary.

GOLDEN WEST BRAND OLEOMARGARINE NOT ELIGIBLE FOR THE LIST OF ACCEPTED FOODS

The Cudahy Packing Company of Chicago presented its Golden West Brand of Margarine for consideration. The firm informed the Council that the product is manufactured in Los Angeles and that it is made from partially hydrogenated cottonseed oil, pasteurized cultured skimmed milk and salt (contains 0.1 per cent of sodium benzoate). The Council gave consideration to the evidence presented regarding the nature of the product and was of the opinion that, if the Rules and Regulations relative to labeling and advertising were met, the product would be acceptable. The package label for this brand of margarine bore a representation of tropical trees. It was the opinion of the Council that, in view of the fact that no descriptive statement of the product appeared on the label; the representation of the "palm" trees gave one the impression that the product was made from palm oil or coconut oil. Cottonseed oil is used in making the product and therefore this brand of margarine cannot be considered as a "nut" margarine. The firm was informed that it would be necessary to revise the label in such a way as to remove the Council's objection to it. This the firm was unwilling to do, stating that "the label was adopted some years ago because its design met with the approval of our advertising committee, and since its adoption it has become so well known among the trade that we are reluctant to make any alteration of it." The Council therefore has authorized publication of this statement that Golden West Brand of Margarine is not acceptable because the firm is unwilling to meet the requirements of the Council. In the opinion of the Council the product is satisfactory but the label is inappropriate.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET : : CHICAGO, ILL.

Cable Address - - : "Medic, Chicago"

Subscription price - - - : Seven dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, JULY 16, 1938

DANGER OF PROTAMINE INSULINS

When the slow acting insulins were first employed clinically, it was hoped they would prove less toxic than the older insulin and that the possibility of developing hypoglycemia would be practically eliminated by their use. This hope has, however, not been fulfilled; reports of reactions have appeared in considerable number. Lawrence and Archer¹ in one of the earlier discussions of protamine zinc insulin said that hypoglycemia from this type is more subtle in onset and on the whole subjective symptoms are less severe than with soluble insulin. Preliminary symptoms of shakiness, sweating and palpitation may be absent; thus severe hypoglycemic symptoms may appear without warning. Four of their patients had this type of reaction.

Further attention was called to the caution necessary in the use of protamine insulin by Jordan.² An 11 year old girl received at 9 p. m. by accident double the usual dose of protamine insulin. About 3 a. m. she was found unconscious, delirious and thrashing about in bed. Although response was prompt to intravenous dextrose, the symptoms returned later and it was two days before a normal condition could be reestablished. More recently Lindsay³ reported the case of a woman who had diabetes and cerebral arteriosclerosis. A short time following change of the insulin from the regular to the protamine type she was found comatose and she died soon thereafter. An analysis of the combined clinical and necropsy information led to the opinion that unconsciousness was due to prolonged and possibly severe hypoglycemia resulting from the cumulative effect of protamine insulin. It was concluded therefore that there is a definite possibility of danger to the arteriosclerotic patient from the prolonged and cumulative effect of the more complex insulin preparations.

1. Lawrence, R. D., and Archer, Nora: Zinc Protamine Insulin, *Brit. M. J.* 1: 487 (March 6) 1937.

2. Jordan, W. R.: Caution in the Use of Protamine Insulin, *Virginia M. Month.* 63: 730 (March) 1937.

3. Lindsay, J. W.; Rice, E. C.; Selinger, M. A., and Mish, K. H.: Protamine Insulin as a Contributing Factor in the Death of a Diabetic Patient with Cerebral Arteriosclerosis, *Ann. Int. Med.* 10: 1892 (June) 1937.

Tolstoi⁴ studied five cases of reaction to protamine zinc insulin and concluded that the hypoglycemia from protamine zinc insulin may appear from ten to twenty-four hours after its administration. Furthermore, reaction may be prolonged unless treated by epinephrine or intravenous medication. Moreover, insulin reactions of this type were often followed so rapidly by unconsciousness that little warning was available for either patient or attendants. In some of these cases, exercise appeared to be a contributing factor to the hypoglycemic reaction.

Attention has likewise been called to this modified insulin reaction by Joslin,⁵ Mosenthal⁶ and Kepler.⁷ Margolin⁸ has reported a case in which protamine insulin appeared to be at least one of the important contributing factors of death.

Ample evidence is therefore now available that protamine zinc insulin is not a fool-proof substitute for the older preparation. Although reactions to it seem to appear with less frequency, they also are often characterized by the suddenness of onset, delayed and therefore unexpected appearance, and symptoms precipitated by exercise at such a distant time as also to be wholly unexpected. Although the development of protamine zinc insulin is an advance of unquestioned value to many diabetic patients, the possibilities of delayed severe reactions cannot be ignored.

THE STANDARDIZATION OF LIVER PREPARATIONS

During the past year the U. S. P. Anti-Anemia Preparations Advisory Board has been engaged in the proper standardizing of official products. Several months ago physicians were informed that the potency of official liver products would hereafter be expressed in terms of units. The units are not interchangeable, depending on the mode of administration of the product.¹

One of the new departures of the U. S. Pharmacopeia, Eleventh Revision, is the method of controlling liver preparations. This official compendium provides that:

1. There shall have been submitted, from time to time, as requested by the Board, satisfactory clinical data from treatment with the product in question, of cases of Addisonian pernicious anemia.

2. The clinical data submitted shall satisfy the U. S. P. Anti-Anemia Preparations Advisory Board that the administration of the material in question, as prepared from liver or stomach, can produce a satisfactory result in the dose given.

4. Tolstoi, Edward: Protamine Zinc Insulin, *New York State J. Med.* 37: 1279 (July) 1937.

5. Joslin, E. P.: Protamine Insulin, *J. A. M. A.* 109: 497 (Aug. 14) 1937; Difficulties in the Use of Protamine Zinc Insulin, *Ibid.* 110: 90 (Jan. 8) 1938. Joslin, E. P.; Root, H. F.; White, Priscilla; Marble, Alexander, and Joslin, A. P.: Protamine (Zinc) Insulin, *M. Clin. North America* 22: 711 (May) 1938.

6. Mosenthal, H. O.: Protamine Zinc Insulin, *J. A. M. A.* 110: 87 (Jan. 8) 1938.

7. Kepler, E. J.: Clinical Experience with Protamine Zinc Insulin, *J. A. M. A.* 110: 92 (Jan. 8) 1938.

8. Margolin, Morris: Protamine Insulin in the Treatment of Diabetes Mellitus, *Nebraska M. J.* 23: 92 (March) 1938.

1. Report on Potency of Liver Products, *J. A. M. A.* 110: 812 (March 12) 1938.

The Council on Pharmacy and Chemistry continues to accept liver products according to the criteria outlined in New and Nonofficial Remedies. In its minutes (published in *THE JOURNAL* July 9) the Council expresses the desire that the U. S. P. Anti-Anemia Preparations Advisory Board publish a statement of its standards. Since the meeting of the Council last March the Anti-Anemia Preparations Advisory Board has taken several important actions of interest to the medical profession. It has agreed that the board should publish the therapeutic and pharmacologic evidence which constitutes the basic factors for evaluating anti-anemia products. By so doing the board believes that the manufacturers will have a better idea of the meaning of the term "U. S. P. unit," and, secondly, that the standards agreed on will serve the board itself as a basis of comparison in determining the relative value of the submitted products. In taking this action, however, the board points out that such data are only a part of the criteria considered to determine the potency of a product, and the board reserves the right to use its own judgment and reach its own decisions based on all evidence presented. It is presumed by this that the board feels that the competence of the individual furnishing the data is of equal importance with the data themselves.

No sooner had the matter of expressing potency in terms of units been announced when commercial interests began either to increase the potency of their products in a competitive effort or, in case of certain nonaccepted preparations, to create units of their own. The board has decided not to grant U. S. P. recognition to injectable products of a greater potency than 15 units per cubic centimeter. As the exact composition of the active principle in liver extracts is not known chemically, the board feels that in the race to concentrate the material to a higher potency some valuable ingredients may be eliminated in the process of concentration. It is hoped that the profession will not be subjected to varying definitions for the unit of potency.

Another equally important decision is that which follows the reasoning of the Council on Pharmacy and Chemistry. The board has decided not to give consideration for acceptance or evaluation of any unofficial mixtures of antianemia products with vitamins, iron or other therapeutic agents. This is decidedly in the interest of rational medicine. When new products, such as liver and sulfanilamide, are introduced to the profession, some pharmaceutical houses immediately endeavor to complicate the therapy by presenting the physician with ready-made mixtures. If other drugs are indicated (and they frequently are not indicated), the physician should be permitted to prescribe them concurrently and in the ratio indicated for the particular patient; in other words, to use individualized medication. The board wisely points out that, without definite clinical evidence of the value of

combinations of products with liver, and with some indication that the antianemia factor may deteriorate by the addition of some of these compounds, it is desirable to avoid all these mixtures and to administer anti-anemia preparations separately.

Finally, the board has decided that it will not approve the use of the statement that the liver extract used in compounding a mixture has a certain number of U. S. P. units, because the action of the vitamin or other added product on the liver extract is not known. Only when products are tested in final form and without vitiating influence can their value be assigned.

MEDICAL EXAMINATIONS FOR DOMESTICS

Experienced physicians have occasionally encountered cases of infectious disease contracted from domestic servants. Attention was called specifically to this public health problem in the May issue of *Hygeia*.¹ Although it is feasible for prospective employers to insist on medical examination, it seems questionable that this method will have sufficiently widespread adoption to be effective. In a paper read before the International Health Officers' Conference last year, Dr. M. J. Exner² of the Health Department of Newark, N. J., described the experiences in that city with the obligatory medical examination of domestic employees in force since September 1930. By the ordinance passed at that time every domestic was required to file with the department of health a certificate from a duly licensed physician stating freedom from contagious and communicable disease. Until 1934 the examination consisted only of inspection of the skin, examination of the mouth, throat and eyes, swabs for smears only in the presence of a discharge, blood tests only with a history of typhoid or syphilis, vaccination when no scar was evident, physical examination of the chest, and x-ray or fluoroscopic examination when abnormal conditions were found. Since early in 1934 blood tests for syphilis have been made in all cases and cervical smears have been examined in all women; in men a routine inspection of the generative organs has been made and smears have been examined in event of any discharge. If the applicant was found free from infectious states, a health card was issued good for six months. If tuberculosis or syphilis was found not in the infectious state, the health cards were issued subject to being revoked if the patient failed to continue treatment.

Since June 1, 1934, the Newark Department of Health has made more than 24,000 examinations of domestics. These have shown a syphilis rate of 17.1 per cent (4.7 among white patients and 26 per cent among Negroes) and a rate of 2.4 per cent of gonorrhea. The results,

1. Kruglick, J. S.: The Real Servant Problem, *Hygeia* 16: 400 (May) 1933.

2. Exner, M. J.: The Medical Examination of Domestics, read before the International Health Officers' Conference in 1937.

however, are not an exact measure of the prevalence of syphilis because they include reexaminations; but since infectious and noninfectious persons reappear with approximately equal frequency, the prevalence rate is not widely divergent.

The argument for examinations of this nature is threefold: the protection of the family of the employer and the general public, the protection and welfare of the domestics themselves, and the general influence on disease control. Furthermore, as pointed out by Exner, the addition of large occupational groups of the general population to satisfactory syphilis control measures in the infectious stage probably serves as the best means of eradicating this controllable disease. The advantages of a comprehensive program for the examination of domestics to all groups concerned are such as to commend this activity to the serious attention of local medical societies, health departments and governmental agencies.

RENAL RICKETS

Renal rickets, renal pseudorickets, renal dwarfism and renal infantilism are terms variously employed to designate a syndrome characterized by the combination of chronic renal disease and deformity of the bones. In 1870 Steiner and Neureutter reported finding six cases of granular atrophic kidney among 256 cases of nephritis in children in which necropsies were performed. Lucas in 1882 reported five cases in which late rickets was associated with albuminuria. He considered the cases to be true rickets and suggested for them the term "rickets of adolescence." More recent investigators, particularly Fletcher and Parsons, have recognized the etiologic relationship between chronic kidney disease and deformities of the bones. In 1930 Mitchell¹ collected from the literature reports of seventy-six cases of renal rickets, to which he added two.

The symptomatology of this unusual condition is essentially that of nephrosclerosis associated with deformities of bone resembling true rickets. The sex distribution is about even. The average age of the onset is 7 years, but symptoms may manifest themselves in early infancy. In the presence of a normal mentality there is a stunted growth and failure or retardation of sex development at puberty. Among the early symptoms are anorexia, headache, vomiting, polyuria and polydipsia. Albuminuric retinitis is frequent and anemia is a constant symptom. Urinalysis shows low specific gravity, albumin, an occasional hyaline cast, and red and white cells. Kidney function tests reveal severe renal insufficiency. Increase in blood pressure is a late sign. Pigmentation of the skin described as sallow, brownish, grayish green or bronzing is a somewhat characteristic sign. Knock knees, the most constant

sign, may be the first symptom which calls attention to the underlying condition.

The changes in the kidneys in the majority of cases of renal rickets are typical of granular atrophy or chronic interstitial nephritis; other pathologic conditions such as urinary calculi have been recorded. These apparently lead to kidney dysfunction and functional insufficiency, obstruction of the urinary tract, congenital dilatation of the urinary passages, acquired or postnatal urinary obstruction and congenital cystic kidney.

The changes in the bones resemble grossly those in true infantile rickets. Enlargement of the epiphyses of the wrist and costochondral junctions, pigeon shaped chest, bossing of the frontal and parietal bones and deformities may occur. Roentgenologic and histologic studies, however, demonstrate that these alterations are somewhat different from those seen in infantile rickets; the shafts of the long bones and the flat bones have greater translucence and a more spongy appearance than are usually seen in ordinary rickets. Parsons² in roentgenologic studies of renal rickets described three well defined groups: (1) the atrophic type, (2) the florid type, which is much like that of florid rickets, and (3) the woolly, stippled or honeycombed type, which appears to be characteristic for renal rickets and quite unlike the appearance associated with true rickets.

It is assumed that the condition is a primary kidney complex resulting in faulty deposition of minerals in osseous tissues. That nephritis does occur in fetal life and in infants has been established at necropsy. Heredity and acute infections, particularly those of streptococcic nature, are among the known etiologic factors. Blood chemistry studies in renal rickets revealed a reversal of the relation between the calcium and the inorganic phosphorus content; during the acute stage, serum calcium is at its lower normal limit while the inorganic phosphorus is at its upper limit. It differs from true infantile rickets in the absence of proof that lack of minerals in the diet is concerned in the pathogenesis of the bone changes; furthermore, the antirachitic factor and ultraviolet rays do not influence renal rickets favorably. It is believed that the cause of the diminished deposition of calcium in the bone is the inability of the kidney to excrete phosphate, which leads to elevation of the blood phosphorus and depression of blood calcium. Mitchell offers the hypothesis that in renal rickets there is a shift of the excretion of the endogenous phosphates from the kidney to the intestine. He suggests that these waste phosphates will be largely in the form of sodium phosphates and ammonium phosphates, forms suited for precipitation of calcium in the intestine. The absorption of calcium will be interfered with presumably because of the formation of insoluble calcium phosphate. Blocking by the phosphorus of the absorption of calcium from the food would then lead to true calcium starvation.

1. Mitchell, A. Graeme: Nephrosclerosis in Childhood, with Special Reference to Renal Rickets, *Am. J. Dis. Child.* 40:101 (July), 345 (Aug.) 1930.

2. Parsons, L. G.: The Bone Changes Occurring in Renal and Cerebral Infantilism and Their Relationship to Rickets, *Arch. Dis. Childhood* 2:1 (Feb.) 1927.

The prognosis is bad. The patients die of uremia as a rule in the second decade. Howard² suggests the possibility of preventing a fatal termination by the early recognition and correction of obstructive pathologic conditions in the urinary tract in some cases. He reports a case in which removal of obstruction to the neck of the bladder resulted in restoration to health.

Current Comment

WHAT IS ADEQUATE HOSPITAL SERVICE?

In the United States, for a population of a hundred and twenty million people, there are 1,124,548 hospital beds, or a ratio of 9.3 hospital beds per thousand people. Excluding mental hospitals, the figure is 4.6. Such ratios, however, when taken alone do not suffice to answer the question as to whether or not we have adequate hospital service. Much depends on whether the population is rural or urban, on the type of housing which prevails, on the availability of servants, on the habits of the people and on the degree to which they have become accustomed to the idea of hospitalization for minor illnesses. In 1937 those states which had the highest percentage of occupancy were the states which had the highest bed ratio, while the states with the smallest number of hospital beds in relation to the population had the largest percentage of unoccupied beds. This would seem to indicate that hospitals have been built where they were needed and have not been built where they are not needed. Another method of appraising the adequacy of hospital service is based on geographic distribution. On the following page of this issue of *THE JOURNAL* is a map of the United States which shows in white all those areas which are within thirty miles of a registered hospital; the remainder of the country is shown on the map in black. It is obvious that the black areas are chiefly confined to the Rocky Mountain areas and adjacent territory. In the United States 98.5 per cent of the people live within thirty miles of a hospital.

MATERNAL AGE AND MONGOLISM

In spite of the antiquity of mongolism as a medical subject, its causation has remained obscure. Bleyer¹ has recently analyzed its incidence in relation to advanced maternal age, low fecundity among women bearing children with mongolism, prolonged interval preceding the birth of a mongoloid imbecile, maternal reproductive exhaustion, ultimogeniture and paternal reproductive exhaustion. He concluded from these studies that the role of advanced maternal age in causing mongolism is undeniable. Although the peak maternal age in the general population in this country in 1934 was 24, the peak age of mothers producing mongoloids in his series of 2,822 cases was 41. Fur-

thermore, the incidence of mongolism increases steadily through the child-bearing period. The likelihood of producing a mongoloid imbecile is increased in direct proportion to the number of menstrual cycles through which a woman has passed. Of the entire group of 2,822 mongoloid imbeciles, 900 were born to women under 31 years of age and 1,922 to women over 31. Mothers from 15 to 19 years of age produced 3.4 per cent of the mongoloid imbeciles, or only one-fourth the expectancy when judged by their proportionate contribution to the total births. In the years from 35 to 39, the mothers producing only 0.9 per cent of the births in the general population gave birth to 23.8 per cent of the mongoloid imbeciles, or an excess over expectancy of 25 to 1. The succeeding five year period, from 40 to 44, showed a further increase above expectancy of 75 to 1. No satisfactory evidence could be found of the relationship to the etiology of mongolism of the other factors investigated. Probably the apparent relation of any of these factors to mongolism can be explained simply through the admixture of advanced maternal age.

VITAMIN B DEFICIENCY AND PEDICULOSIS

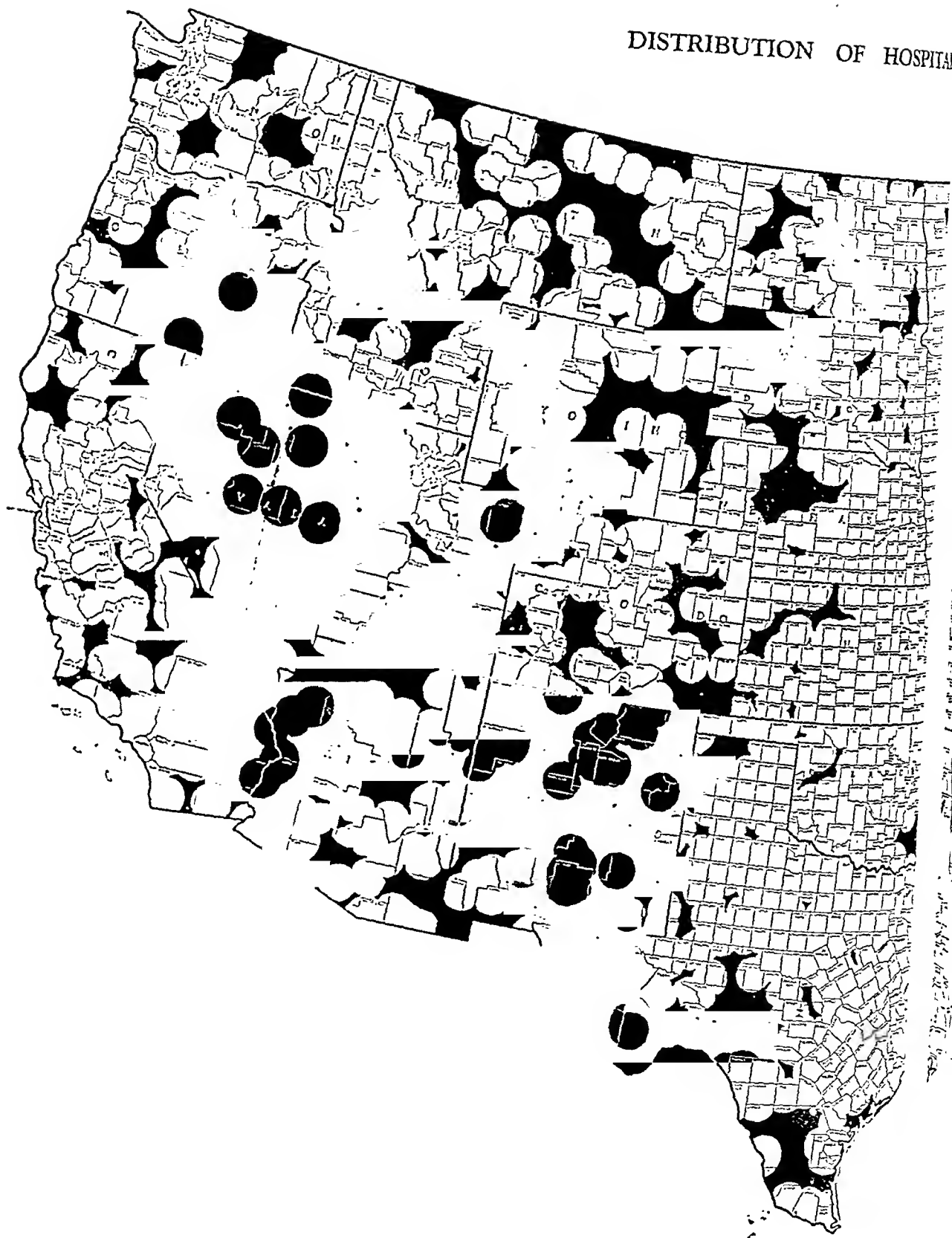
Among the curiosities of current pathologic research is György's¹ recent observation that vitamin B₂ deficiency is often associated with pediculosis in rats and that avitaminotic lice-infested rats can be successfully deloused by the oral administration of riboflavin. If confirmed, this observation would seem to suggest that riboflavin is a necessary factor in the normal sensory acuity of the skin, a deficiency in this factor reducing skin sensitivity so that the rats do not keep themselves normally free from these parasites. Other explanations are, of course, possible. György's observation was a by-product of a five years study of the various types of vitamin B deficiency. Pediculosis was observed in about 20 per cent of all rats that were kept for from two to three months on a vitamin B₂-free diet. Lice, however, did not appear in control rats fed diets free from other fractions of the vitamin B complex. Therapeutic administration of riboflavin to the lice-infested rats was followed by a complete disappearance of the parasites, often accompanied by replacement of diseased patches by new fur. At first György regarded this phenomenon as purely coincidental, probably associated with a generally diminished vitality of the rats, which might then be unable to keep themselves clean in the efficient manner of normal animals. To his surprise, however, the majority of the lice-infested rats were by no means weakened or inactive. Moreover, pediculosis was not observed even in moribund rats suffering from B₆ avitaminosis or in rats moribund for lack of the maturation factor. He therefore concluded that the observed pediculosis was specific for riboflavin deficiency. Effects of B₂ avitaminosis on cutaneous reflexes and sensory acuity have not yet been studied, nor have the conceivable changes in the odor, flavor or pH of the skin as yet been investigated.

3. Howard, T. L.: Renal Rickets or Renal Dwarfism. *Am. J. Surg.* 40: 323 (May) 1938.

1. Bleyer, Adrien: Role of Advanced Maternal Age in Causing Mongolism. *Am. J. Dis. Child.* 55: 79 (Jan.) 1938.

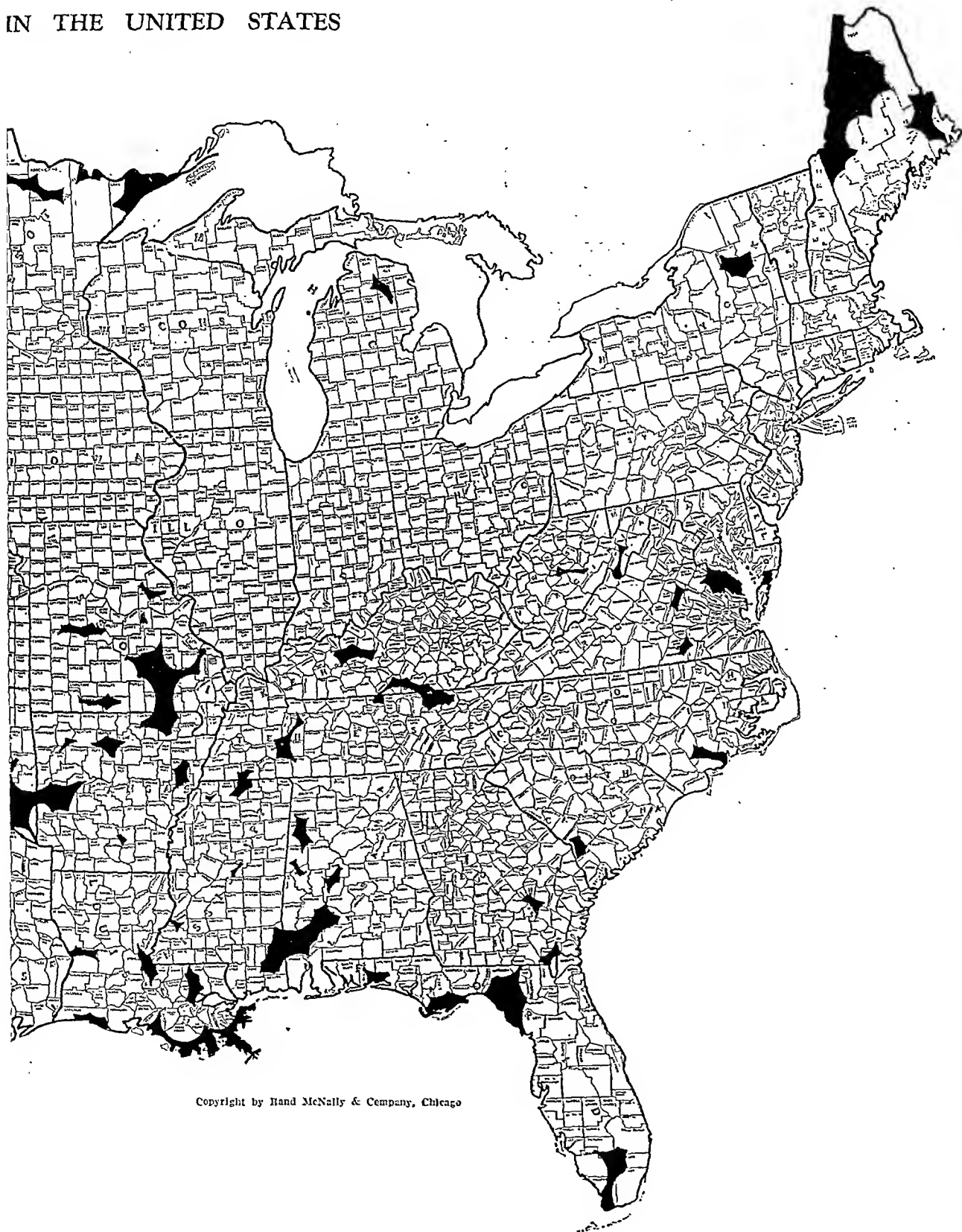
1. György, Paul: *Proc. Soc. Exper. Biol. & Med.* 38: 383 (April) 1938.

DISTRIBUTION OF HOSPITALS



Map of United States, showing in WHITE all areas within 30 miles of a hospital, and in BLACK all areas not within 30 miles of a hospital.

IN THE UNITED STATES



Copyright by Rand McNally & Company, Chicago

within 30 miles of a hospital; 98.5 per cent of the population of the United States lives within 30 miles of a hospital.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Personal.—Dr. Alfred G. Rice, Northville, Mich., has been appointed director of tuberculosis control in North Alabama, succeeding Dr. Kellie N. Joseph, Birmingham, who retired to reenter private practice.

Society News.—At a joint meeting of the northern divisions of the Medical Association of the State of Alabama in Clarence, June 2, the speakers included Drs. Arthur B. Harris, Birmingham, on "Glioma of the Retina"; William B. Anderson, Nashville, Tenn., "Chronic Bright's Disease in Pregnancy"; Cecil D. Gaston, Birmingham, "The Embryo"; James O. Morgan, Gadsden, "Uteroplacental Apoplexy" and Carl A. Grote, Huntsville, "Heart Disease and Its Treatment in General Practice."

CALIFORNIA

Plague Infection in Santa Cruz County.—According to *Public Health Reports*, plague infection was proved in fleas collected from beecheyi squirrels in Santa Cruz County as follows: A pool of six lots of fleas from ranches in the vicinity of Watsonville, which produced typical plague when inoculated into guinea pigs April 27; seventeen fleas from two beecheyi squirrels collected April 27, 8 miles east of Watsonville, and sixty fleas from one beecheyi squirrel, found dead 6 miles east of Watsonville. According to the state department of health, May 11, infection had been proved in eighteen fleas collected at the mouth of a squirrel burrow in Santa Cruz County.

Dr. Warnshuis Goes to Massachusetts.—Dr. Frederick C. Warnshuis, San Francisco, formerly secretary of the California Medical Association, has been appointed president of the American Medico-Legal Association with headquarters in Boston and editor-in-chief of its journal. The association, which was chartered in Massachusetts nine months ago under the sponsorship of some Eastern medical men, attorneys and educators, aims to coordinate all branches of the medical profession and to seek uniformity in rules and regulations dealing with medico-legal work. Its journal will be devoted to medical jurisprudence, and will be published bimonthly with eighty or more pages per issue. The first issue is expected to appear in September. Present members of the editorial board include:

Dr. George H. Magrath, emeritus professor of legal medicine, Harvard University Medical School, Boston.

Eugene O'Dunne, judge of the supreme court in Baltimore, lecturer in medical jurisprudence, Johns Hopkins University.

Dr. Tracy J. Putnam, professor of neurology, Harvard.

Dr. Myrtelle M. Canavan, curator, Warren Anatomical Museum at Harvard.

Archers Honor Dr. Saxton Pope.—The memory of Dr. Saxton T. Pope, for many years a member of the teaching faculty in the department of surgery of the University of California Medical School, San Francisco, was honored by archers of the United States July 3 when ceremonies were held the first day of the annual championship tournament of the Western Archery Association on the campus of the university at Los Angeles. Dr. Pope is credited with making archery popular in this country. According to the "History of the California Academy of Medicine," Dr. Pope's interest in the use of the bow and arrow as a sporting weapon dates from 1912 when he met Ishi, the sole survivor of the Yana tribe of Indians. He wrote "A Study of Bows and Arrows" and "The Medical History of Ishi." From 1912 until 1925 there were about seventeen expeditions made to hunt solely with the bow and arrow. In 1925, the last of the expeditions, Dr. Pope went to Africa in the company of Stewart Edyard White and his companion Arthur Young. Just prior to his death, Aug. 8, 1926, from pneumonia, Dr. Pope wrote the story of the expedition in the book "The Adventurous Bowman." Born in Texas Sept. 4, 1875, Dr. Pope served as secretary of the San Francisco County Medical Society and in 1922 as president; he was director of the League for the Conservation of Public Health and secretary of the California Academy of Medicine, 1913-1914. He graduated at the University of California Medical School in 1899, becoming a member of its faculty in 1912 after carrying on a surgical practice in Watsonville.

COLORADO

Society News.—Dr. Harry H. Wear, Denver, addressed the Montrose County Medical Society May 6 on "Urologic Problems of the General Practitioner."—At a meeting of the Crowley County Medical Society May 6 Dr. William T. H. Baker, Pueblo, spoke on medical economics.—Drs. Alexander D. Waroshill and Royal C. Adkinson, Florence, discussed cholecystitis and cholelithiasis before the Fremont County Medical Society.—Drs. Samuel P. Newman Jr. and Alfred M. Wolfe, Denver, discussed "Fractures of the Elbow and Ankle" before the Northeast Colorado Medical Society at its meeting in Sterling May 12.—Dr. Alta E. C. Borden, Pueblo, discussed marilmana before the Pueblo County Medical Society May 17.

CONNECTICUT

Personal.—Dr. Alice Hamilton, Hadlyme, received the honorary degree of doctor of science from the University of Rochester (N. Y.) at its eighty-eighth annual commencement June 20.—Dr. De C. Y. Moore, chairman of the board of health and health officer of Manchester for nearly twenty-five years, has been appointed medical examiner to succeed the late Dr. Le Verne Hoffnes.

DISTRICT OF COLUMBIA

Society News.—Dr. Winfred Overholser addressed the Academy of Medicine of Washington at its spring meeting May 14 on "The Psychiatrist in Court."—Dr. Daniel L. Borden has been elected president of the Washington Academy of Surgery and Dr. John O. Warfield Jr. secretary.

Survey of Cancer of Lungs.—The U. S. Public Health Service is conducting a survey of cancer of the lungs in Washington hospitals as a part of a national study, according to the *Washington Star* June 7. Dr. James A. Crabtree, Chattanooga, Tenn., formerly assistant head of the health and safety department of the Tennessee Valley Authority, is in charge. Similar studies will be made in hospitals throughout the country treating cancer.

ILLINOIS

New Health District.—Dr. Wilmer M. Talbert, Decatur, formerly city physician for Decatur, has been appointed health officer of a new district health unit with headquarters at Clinton. The counties of Macon, Montrie, Dewitt, Piatt and McLean are included in the new unit.

Chicago

Graduate Course in Pediatrics and Obstetrics.—A graduate course in obstetrics and pediatrics will be conducted by the department of obstetrics and pediatrics at Research and Educational Hospital during July and August. The speakers will include Drs. Joseph L. Baer, Frederick H. Falls, Fred L. Adair, William C. Danforth, Abraham F. Lash, William H. Browne and Charles Newberger, all obstetricians, and Drs. Julius H. Hess, Clifford Grace, Arthur H. Parmelee, Isaac A. Abt, Maurice L. Blatt, Robert A. Black and Henry E. Irish, all pediatricians. The course, consisting of lectures on special subjects, round table discussions, ward walks in the hospital, dispensary service, manikin, home and hospital delivery, is designed to meet the needs of the general practitioner as they are encountered in everyday practice. The registration fee is ten dollars; checks should be made payable to the University of Illinois, 1853 West Polk Street.

INDIANA

Survey of Industrial Hazards.—A study of industrial hazards will begin this month in Indiana, according to the state medical journal. Conducted by the new bureau of industrial hygiene, the survey is expected to provide a cross section of health conditions in the state's factories. While it will not be possible to inspect every plant, a check will be made in industries known to have hazardous health conditions.

Society News.—Dr. John W. Ferrin, Chicago, discussed prostatic surgery before the LaPorte County Medical Society in Wauwatosa May 19.—The Daviess-Martin County Medical Society was addressed in Washington May 31 by Dr. William N. Wishard Jr., Indianapolis, on "Prostatic Obstruction."—Dr. Emor L. Cartwright, Fort Wayne, discussed diseases of the rectum and anus before the Adams County Medical Society in Decatur May 20.—At a meeting of the Parke-Vermillion County Medical Society in Clinton May 18 Dr. James H. Hawk, Indianapolis, spoke on puerperal infection and antepartum care.—The Wayne-Union Counties Medical Society was addressed in Liberty June 9 by Dr. Franklin D. Johnston, Ann Arbor, on

"Electrocardiology in Diagnosis of Coronary Occlusion."—Dr. Frank H. Lahey, Boston, discussed "Peptic Ulcer: Its Non-surgical and Surgical Management" before the Muncie Academy of Medicine May 10.

IOWA

District Meeting.—The Iowa and Illinois Central District Medical Association held its annual meeting at the Outing Club in Davenport May 25. The speakers were Drs. Dallas B. Phenister, Chicago, on "Use of the Bone Graft in the Treatment of Bone Tumors"; Alexander E. Brown, Rochester, Minn., "Sulfanilamide Therapy," and James H. Means, Boston, "The Commoner Deficiency Syndromes Found in a Medical Clinic." Dr. Anton Knutson, Reynolds, Ill., lectured in the evening on "Hunting Big Game in Africa." Two members who have completed fifty years in practice were given special recognition at this meeting: Drs. George B. Maxwell, Davenport, and George A. Wiggins, Milan, Ill.

KANSAS

Hall of Health in Wichita.—The Sedgwick County Medical Society sponsored a "hall of health" in Wichita May 7-16. The period of the exhibit included the annual session of the Kansas Medical Society. It was formally opened with the unveiling of the Camp Transparent Woman, the ceremony being broadcast over a local radio station. There was a 10 cent admission charge; the cost was \$2,500 and a total of 27,000 persons visited the hall. The society furnished the rent, booth space, shelving and electricity free of charge. There were fifty-two exhibit spaces.

KENTUCKY

Society News.—Drs. Dougal M. Dollar and John Stites addressed the Jefferson County Medical Society, Louisville, June 6, on "Anesthesia" and "Agranulocytosis" respectively. At the meeting June 20 the speakers were Drs. Gordon S. Buttorff, "Control of Hemorrhage with Special Reference to Moccasin Snake Venom"; Ellis S. Allen, "Hazards of Blood Transfusion," and William J. Martin, "Anal Fissure."—Dr. George A. Hendon addressed the Louisville Surgical Society June 3 on "Multiple Abscess of the Liver."—Dr. Frederick G. Speidel addressed the Society of Physicians and Surgeons of Louisville June 16 on "Treatment of Nephritis."—Dr. John Walker Moore, Louisville, addressed the Louisville Medico-Chirurgical Society recently on "Studies in Hemodynamics of Patients Receiving Insulin Shock Therapy."—Drs. Franklin H. Russell, Wickliffe, and Willis R. Moss, Clinton, addressed the Tri-County Medical Society of Hickman, Carlisle and Ballard counties June 7 on angina pectoris and scarlet fever, respectively.

LOUISIANA

Past Presidents' Night.—The Orleans Parish Medical Society devoted its June 29 meeting to honoring past presidents. Dr. Shirley C. Lyons gave the address of welcome and Dr. Marcus J. Magruder the response. Dr. James M. Mason, Birmingham, Ala., gave "A Review of Progress in the Treatment of Empyema" and Dr. Rudolph Matas presented certificates to the honor guests on behalf of the society. There have been forty-eight presidents since 1878, when the society was established.

MASSACHUSETTS

Personal.—Dr. Ruth E. Fairbank, associate in psychiatry, Johns Hopkins University School of Medicine, Baltimore, has been appointed professor of hygiene at Mount Holyoke College, South Hadley, Science reports. Dr. Fairbank graduated at Johns Hopkins in 1916.

Courses for Graduates.—A course in urology will be held at the Harvard University Medical School, Boston, July 18-30, under the direction of Dr. George G. Smith and his associates. Mornings will be devoted to operations, ward visits, cystoscopic diagnosis of urologic problems, while the afternoons will be given over to special discussions. The fee is \$80. Additional information may be obtained from the assistant dean, Courses for Graduates, Harvard University Medical School, Boston.

MICHIGAN

Society News.—Dr. John J. Prendergast Jr., Detroit, has been elected president of the newly organized Michigan Society for Industrial Hygiene. —Dr. Harold L. Morris, Detroit, discussed "Pyelitis of Pregnancy" before the Muskegon County Medical Society in Muskegon June 17.

MINNESOTA

Dr. Harrington Honored.—A dinner was given for Dr. Francis E. Harrington, health commissioner of Minneapolis and founder and director of the Lymanhurst Health Center at the Minnesota Union, University of Minnesota, May 23. The occasion also commemorated the seventeenth anniversary of the health center as a school for tuberculous children. Dr. William A. O'Brien, associate professor of pathology and preventive medicine and public health, University of Minnesota Medical School, Minneapolis, was toastmaster and speakers included Drs. Arthur E. Benjamin, Stephen H. Baxter, Chester A. Stewart, Jay Arthur Myers and Irvine McQuarrie, all of Minneapolis; Robert B. J. Schoch, health officer of St. Paul, and Carl Buck, Dr.P.H., New York, field director of the American Public Health Association.

Dr. Meyerding Resigns—Receives Award.—Dr. Edward A. Meyerding, St. Paul, secretary of the Minnesota State Medical Association for fourteen years, resigned at the recent annual meeting in Duluth. Dr. Meyerding had been on a year's leave of absence from the association. He will continue on a full time basis as executive secretary of the Minnesota Public Health Association, a position he has also held since 1924. At the annual banquet of the association June 30, Dr. Meyerding was presented with the first Distinguished Service Award created by the house of delegates of the state society to be presented on occasion in recognition of special service to the association. A native of St. Paul, Dr. Meyerding graduated at the University of Minnesota Medical School, Minneapolis, in 1902. Before he became associated with the medical and public health associations, he served as director of the division of hygiene and special classes of the public schools of St. Paul for fifteen years. He is president of the Mississippi Valley Conference on Tuberculosis.

MISSOURI

Annual Fall Conference.—The sixteenth annual fall clinical conference of the Kansas City Southwest Clinical Society will be held in Kansas City, October 3-6. Guest speakers will include Drs. Grady E. Clay, Atlanta, Ga.; James B. Costen, St. Louis; Thomas Leon Howard, Denver; Chester A. Stewart, Minneapolis; William J. Dieckmann, Chicago; Frank R. Ober, Boston, Mass.; Louis J. Karnosh, Cleveland; Elmer L. Sevringhaus, Madison, Wis.; William D. Sansum, Santa Barbara, Calif.; Lawrence Reynolds, Detroit, and Isidor S. Ravdin, Philadelphia.

Cornerstone Laid for Psychopathic Institute.—The cornerstone of the new Malcolm A. Bliss Psychopathic Institute, St. Louis, was laid June 26. A city institution, the building will cost about \$1,000,000 and accommodate 185 patients, with 142 beds for white patients and forty-three for Negroes. Funds for the project came from a 1934 bond issue and a PWA grant, newspapers reported. The institute will be primarily for the study of new and borderline cases, the latter to be segregated from the actually insane. The building will be ready about March 1939. Dr. Bliss, in whose honor it is named, was for many years associated with the city institutions. He died in 1934.

NEW HAMPSHIRE

Shellfish from Bay Area Banned.—The state board of health has recently placed a ban on the sale for human food of shellfish taken from the "Great Bay area" because of contamination of rivers flowing into the area with sewage from Portsmouth, Dover and other towns. Collection and analyses of clams and water from the lower part of the area has definitely shown that shellfish taken there is unfit for food, and studies are in progress of clams from the mouth of the Exeter River and oysters from the Oyster River.

NEW JERSEY

Dr. Shope Awarded Alvarenga Prize.—The College of Physicians of Philadelphia has awarded the Alvarenga Prize for 1938 to Dr. Richard Edwin Shope of the department of animal and plant pathology of the Rockefeller Institute for Medical Research, Princeton. The award was made in recognition of his research on influenza. Dr. Shope, who is 35 years old, is a graduate of the State University of Iowa College of Medicine, Iowa City, and has been associated with the Rockefeller Institute since 1925. In 1937 he received the John Phillips Memorial Prize of the American College of Physicians. The Alvarenga Prize was established by the will of Pedro Francisco d. Costa Alvarenga, an associate fellow of the College of

Physicians of Philadelphia, to be awarded annually on the anniversary of the death of the donor, July 14, to the author of the best memorial or unpublished essay on any branch of medicine deemed worthy of the prize.

NEW YORK

Committee to Aid in Survey.—A committee of the Medical Society of the State of New York has been appointed to cooperate with county medical societies concerning questionnaires in the survey of medical service now in progress under the sponsorship of the American Medical Association. Members of the committee, which was appointed by the president of the society, Dr. William A. Groat, Syracuse, are Drs. Oliver W. H. Mitchell, Syracuse, chairman; Herbert H. Baekus, Buffalo; Frederic C. Conway, Albany; Charles Gordon Heyd, New York; Walter W. Mott, White Plains; Leo F. Schiff, Plattsburg, and Edward G. Whipple, Rochester.

New York City

Commission to Study Crippled Children.—A study of the care of physically handicapped children was launched recently with the appointment by Mayor La Guardia of a special commission with Dr. Philip D. Wilson, surgeon in chief of the Hospital for Ruptured and Crippled, as chairman. Dr. Vernon W. Lippard, associate attending pediatrician to the New York Hospital and instructor in pediatrics at Cornell University Medical College, has been selected to direct the survey, which will continue until July 1, 1939, and has obtained leave of absence from his other duties for that period. The first step will be the establishment of a registration bureau in the headquarters in the Lower West Side Health Center, 303 Ninth Avenue, Manhattan. The survey will analyze the type of care a child receives when once referred to a hospital or organization; it will also determine the extent of duplication of services and whether continued service is given to the handicapped child until he reaches maturity. The material thus gathered will be used in developing a program for proper physical, mental, educational and vocational care of these children, and the commission will have the right to recommend changes or revisions in the present set-up which may be considered necessary. Members of the commission are, in addition to Dr. Wilson, Drs. Alan De Forest Smith, Bradley L. Coley, Leo Mayer, Foster Kennedy, Herbert B. Wilcox, Howard R. Craig; Thomas S. McLane, treasurer, Association for the Aid of Crippled Children; Stanley P. Davies, director, Charity Organization Society; Lionello Perera, member, board of child welfare; Miss Katherine Faville, director, Henry Street Nursing Service, and Mrs. Adrian Van Sinderen, president, Brooklyn Visiting Nurse Association. Ex officio members are Dr. John L. Rice, city health commissioner; Dr. Sigismund S. Goldwater, hospital commissioner; Dr. Edward S. Godfrey Jr., Albany, state health commissioner; Harold G. Campbell, Ph.D., superintendent of schools, and William Hodson, welfare commissioner.

NORTH CAROLINA

Seminar on Tuberculosis.—The Buncombe County Medical Society held its second annual seminar on tuberculosis in Asheville July 11-16. Sessions were held partly in the Asheville Medical Library and partly in offices of several physicians, who gave special demonstrations and conferences. Among the speakers, all of Asheville, were Drs. Alfred Blumberg, "Pathology of Tuberculosis"; Thomas R. Hufines, "Tuberculosis of the Genito-Urinary Tract"; Paul H. Ringer, "Differential Diagnosis of Pulmonary Tuberculosis"; William P. Herbert, "Principles of Collapse Therapy," and Robert R. Ivey, "Emergency Surgery on the Tuberculous."

OHIO

Gift for Research at Ohio State.—Ohio State University College of Medicine, Columbus, has received a gift of \$200,000 from the estate of Miss Marietta Comly, formerly of Columbus and Washington, D. C. Miss Comly's gift is a memorial to her father, the late Dr. J. W. Comly, and to her brother-in-law and sister, Dr. and Mrs. Nathaniel R. Coleman, Columbus. Dr. Coleman at his death bequeathed his medical library to the university and Miss Comly contributed \$3,000 for additions to the library. Later she set up a trust fund of \$20,000 for an alcove to house the Coleman collection. In 1929 she gave \$1,000 for a student loan fund and in her will gave \$5,000 more for that purpose. According to Dr. Charles A. Doan, chairman of the department of medicine and director of medical research, the income from the gift will be used to expand research programs already in progress at the college of medicine.

SOUTH CAROLINA

Secretary Hines Honored.—At the recent annual meeting of the South Carolina Medical Association at Myrtle Beach, the association presented to Dr. Edgar A. Hines, Seneca, a silver tray, pitcher and goblets in recognition of his long service as secretary and editor of the journal of the association. The presentation was made at the president's ball by Drs. Leonidas M. Stokes, Walterboro, president, and James R. DesPortes, Fort Mill, president-elect. Dr. Hines, who graduated from the Medical College of South Carolina in 1891, has been secretary since 1909 and editor of the journal since 1912. Among many activities Dr. Hines has been vice chairman of the state board of health for many years and was one of the founders of the board's bureau of child hygiene. In 1929 he was president of the South Carolina Pediatric Society. For many years he has been a member of the House of Delegates of the American Medical Association.

TEXAS

District Meeting.—The eleventh district of the Texas State Medical Association held a meeting in Athens recently with the following speakers, among others: Drs. George R. Herrmann, Galveston, "Modern Conceptions in the Diagnosis and Treatment of Hypertensive Arteriole Disease"; Christopher B. Carter, Dallas, "Resection of the Recurrent Laryngeal Nerve in Tuberculosis of the Larynx"; Don Price, Athens, "Acute Suppurative Otitis Media," and Howard D. Cogswell, Tyler, "Treatment of Burns."

GENERAL

Broadcast on Accidents from Fireworks.—The National Society for the Prevention of Blindness prepared an electrical transcription of a ten minute program depicting dangers to eyesight from fireworks for presentation on and near the Fourth of July. The record includes an interview with Lewis H. Carris, managing director of the society, by Myron Weiss, associate editor of *Time*, and a brief dramatic sketch of a typical fireworks accident in which a boy is injured. The society offered the transcription free of charge to radio stations that desired to use it.

Society of Allergists.—The Ohio Valley Society of Allergists was recently organized with members from Indiana, Kentucky and southern Ohio. Dr. Albert R. Zoss, Cincinnati, was elected president and Dr. John Harold King, Cincinnati, secretary, at an organization meeting in Cincinnati last February. The spring scientific meeting was held in Cincinnati May 21-22 and was devoted to a discussion of fungi. Dr. Samuel M. Feinberg, Chicago, gave an address on "The Role of Air-Borne Fungi in Allergy." Other guests included Drs. Frederick W. Wittich, Minneapolis; John M. Sheldon, Ann Arbor, and Karl D. Figley, Toledo.

Society News.—The medical section of the American Life Convention held its twenty-eighth annual meeting at Asheville, N. C., June 16-18. Dr. Albert E. Johann, Des Moines, Iowa, was elected chairman, Dr. Maurice B. Bender, New York, vice chairman, and Dr. Benjamin F. Byrd, Nashville, Tenn., secretary. Dr. Henry Chesley Bush, Livermore, Calif., was elected president of the National Tuberculosis Association at its annual meeting in Los Angeles June 21. Drs. Frederick T. Lord, Boston, and Paul P. McCain, Sanatorium, N. C., were elected vice presidents; President Roosevelt and Dr. Henry D. Chadwick, Boston, were elected honorary vice presidents. Dr. Charles J. Hatfield, Philadelphia, was re-elected secretary.

Plan to Organize Society for Blood Transfusion.—Invitations are being issued to transfusionists and hematologists in the United States to join a national committee now being organized, the members of which will be members of an International Society for Blood Transfusion and Hematology now under consideration. At the closing session of the second International Congress on Blood Transfusion in Paris Sept. 29-Oct. 2, 1937, it was decided to establish the new society. It was agreed that each country form a national committee, the members of which are to form the international society. The purpose of the latter is to contribute to the advancement of scientific and practical knowledge concerning blood transfusion and blood studies by bringing together from the different countries those interested in these subjects. There is to be an international congress every three years, the next one to be held in 1940 in a city not yet selected. Dr. Lester J. Unger, 135 East Seventy-Fourth Street, New York, is secretary pro tem of the organization committee.

Assembly of Women's Field Army.—The first national assembly of the Women's Field Army of the American Society for the Control of Cancer was held in Kansas City in May in

conjunction with the national convention of the General Federation of Women's Clubs. Forty-three states were represented. The assembly opened with a dinner for state commanders at which the speakers included Mrs. Marjorie B. Illig, national commander; Clarence C. Little, Sc.D., managing director of the American Society for the Control of Cancer; Miss Alma Porter, executive secretary of the field army; Mrs. Grace Morrison Reynolds, Paducah, Ky., honorary national commander, and Arthur H. Estabrook, Ph.D., director of literature and exhibits for the society. There were also round table discussions and an open forum. A "hall of health" was presented during the week of May 10-18 under the supervision of Dr. Estabrook and Mrs. Illig, who is chairman of the health division of the federation of women's clubs. An extensive cancer control exhibit was included in the display and many state divisions of the field army had exhibits of their work.

Report of Golf Tournament in San Francisco.—One hundred seventy-nine medical golfers from all parts of the United States played the beautiful San Francisco Golf and Country Club course in San Francisco on the occasion of the twenty-fourth annual tournament of the American Medical Golfing Association, Monday, June 13. Ideal weather was scored and most of the entrants played thirty-six holes. The fifty-two trophies and prizes were awarded after the golfers' dinner, at which Dr. Walt P. Conaway, Atlantic City, N. J., president of the A. M. G. A., presided. Dr. James W. Morgan, chairman of the local golf committee, presented the prizes.

The championship was won by Dr. James J. Marck, Cleveland, who turned in a 76-80—156 for the thirty-six holes. He received the famous Will Walter Trophy, named in honor of the dean and organizer of the A. M. G. A., now of Charlottesville, Va.

The Handicap Championship was won by Dr. Rutherford T. Johnstone, Los Angeles, who bagged the Detroit Trophy, presented by the Detroit hosts in 1916.

The Eighteen Hole Championship went to Dr. Henry W. Milo, Mountain View, Calif., who took home the Golden State Trophy, presented by the San Francisco hosts in 1923. The Eighteen Hole Handicap Championship was awarded to Dr. Robert M. Harris, Miami, Fla., who won the Ben Thomas Trophy.

The Maturity Event, limited to Fellows over 60 for the best net score on the first eighteen holes, was won by Dr. William J. McGowan, Paducah, Texas, who won the Minneapolis Trophy. Other winners in this event were Drs. George H. Morris, Santa Maria, Calif.; Harry V. Hubbard, Plainfield, N. J., and Ream S. Leachman, Vallejo, Calif.

Dr. James Eaves, Oakland, Calif., first champion of the A. M. G. A. (at San Francisco in 1915) and president of the A. M. G. A. in 1924, won the Old Guard Championship awarded to past presidents, and received the Wendell Phillips Trophy. Another prize winner in this event was Dr. Walter F. Schaller, San Francisco, who was A. M. G. A. president in 1930.

The Championship Flight, low gross, was won by Dr. Duke R. Gaskins, Phoenix, Ariz., who secured the St. Louis Trophy. Other winners were Drs. Le Roy Brooks, San Francisco, and Roderic P. O'Connor, Oakland. The first net prize in this flight went to Dr. Lawrence A. Schueler, Los Angeles, who won the President's Trophy, a sterling silver pitcher presented by Dr. Walt P. Conaway. Dr. Erastus S. Edgerton, Wichita, Kan., was another winner in this event.

The First Flight gross winners were Drs. Robert C. Jamieson, Detroit; Henry D. Neufeld, Concord, Calif.; Quinter O. Gilbert, Oakland, and Walter B. Hardy, Birmingham, Ala. First prize among the nets was won by Dr. Edmund W. Butler, San Francisco; other prize winners were Drs. Harry E. Mock, Chicago; Leland H. Taylor, Oakland; Roseoe A. Ford, Los Angeles, and Smith A. Quimby, Madera, Calif. The Second Flight gross winners were Drs. August M. Brewer, Oklahoma City; James P. Warren and Edward F. Stadtherr, San Francisco, and Waltman Walters, Rochester, Minn. Net prizes went to Drs. Franklin G. Ebaugh, Denver; Francis B. Zener, Portland, Ore.; Joseph E. Bittner Jr., Yakima, Wash.; George A. Gray, San Jose, Calif., and George S. Johnson, San Francisco. The Third Flight winners were Drs. John R. Moritz, Beatrice, Neb.; Leslie L. Numm, Vancouver, Wash., and William H. Bailey, Oklahoma City. The Fourth Flight winners were Drs. William J. Ryan, Duluth, Minn., and Samuel M. O'Connor, San Francisco. Fifth Flight winners were Drs. Stanley Dougan, San Jose, and Lewis A. Alesen, Los Angeles.

Drs. Merle G. Howard, Eugene, Ore., and David H. Houston, Seattle, were prize winners for excellent eighteen hole scores in the First Flight. In the Second Flight, similar prowess resulted in prizes for Drs. Cletus S. Sullivan and Donald R. Threlfall,

both of San Jose, Calif. Other winners in the eighteen hole event were Drs. James G. Matthews, Spokane, Wash., and W. Albert Cook, Tulsa, Okla.

The Blind Bogey was won by Dr. Daniel P. Foster, Detroit, on a toss with Dr. Joseph V. Van Cleve, Wichita. Dr. Foster was presented with the Atlantic City Trophy, a sterling silver platter presented by the hosts of 1937. In addition to Dr. Van Cleve, other prize winners were Dr. Arthur C. McCarty, Louisville, Ky., and Dr. Ralph W. McKelvy, Los Angeles.

Election of Officers

Dr. Erastus S. Edgerton, Wichita, Kan., was chosen by unanimous vote as president of the A. M. G. A. for the ensuing year. Dr. George Washington Hall, Chicago, was reelected first vice president, and Dr. James W. Morgan, San Francisco, second vice president. The retiring president, Dr. Conaway, was made a member of the board of directors. The next meeting will be held in St. Louis at the time of the 1939 A. M. A. Annual Session.

The officers of the A. M. G. A. express their thanks to the many friends of the association who helped make the San Francisco tournament such a notable success. They are especially grateful to the San Francisco committee, which arranged all details so efficiently, and to the scores of prize donors, whose generosity is acknowledged.

FOREIGN

Congress on Rheumatism in New York in 1940.—At the International Congress on Rheumatism held at the University of Oxford, England, March 28-31, it was decided to hold the next congress in New York in June 1940. Dr. Ralph Pemberton, Philadelphia, was elected president. Subjects to be discussed will be the role of infection in rheumatic diseases, nutrition in rheumatism and the social significance of orthopedic work in rheumatic diseases. It was also resolved to hold a symposium on therapy in rheumatism.

Congress on Renal Insufficiency.—The second Congress on Renal Insufficiency will be held at Evian, France, September 21-24, under the auspices of the Medical Society of Evian. The official language will be French. A program of reports has been prepared and discussions may be presented. For the latter the titles must reach the general secretariat before August 1. For information address the General Secretariat, Deuxième Congrès de l'Insuffisance Rénale, 138 Avenue des Champs Elysées, Paris, or from July 16 to August 15, Direction Cachat, Evian-les-Bains, Haute Savoie, France.

Course in Malariology in Rome.—The Institute of Malariology in Rome is offering a course in malariology July 18 to September 17. The subjects to be covered are hematology, protozoology, malaria parasites and microscopic diagnosis, pathology of malaria, clinical malaria, entomology, epidemiology, prophylaxis, a survey of a malarious area and the results of malarial treatment of mental diseases. Various excursions to observe methods of malaria control in other cities have been arranged. The lectures will be in French and are limited to graduate physicians.

Cholera Epidemics.—Newspapers report that 17,330 persons have died of cholera in the United Provinces in the north of India in an epidemic reported to be one of the worst in many years. The number of cases reported June 26 was 35,000. Bodies of victims are thrown into the rivers that supply drinking water and religious Hindus, many infected with cholera, continue to bathe in the Ganges. Inadequate communication and transport facilities also hinder relief work in remote villages. Mass inoculation of exposed persons and disinfection of dwellings was reported to be under way.—Cholera has reached epidemic proportions in Shanghai, the Associated Press reported June 25. It was said there were 350 cases in the International Settlement and 145 in the French concession. Several cases were reported from Soochow, and 200 persons were said to have died in Swatow. A report July 10 stated that 1,728 Chinese have been stricken and 234 have died. The dispatch also reported that new cases are appearing at the rate of seventy a day. Millions are being inoculated.

LATIN AMERICA

Conference on Rural Hygiene.—An intergovernmental conference on rural hygiene will be held in Mexico City November 10-20. Topics selected for discussion include organization of rural medicine and health services (curative medicine, preventive medicine, health insurance and medical assistance in rural areas); selected problems of rural pathology; medical and health survey of a rural region; nutrition in rural districts; conditions of rural life.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 18, 1938.

Effects on Pregnancy of Operations on the Cervix

At the North of England Obstetric and Gynecologic Society Dr. J. W. A. Hunter made a plea for the use of more conservative treatment of endocervicitis and cervical lacerations in women of the child-bearing age instead of the extensive plastic operations which were becoming more common. The reports of cases of cervical amputation and repair showed such sequelae as sterility, repeated abortion and premature or obstructed labor. His interest in the subject began with seeing a patient whose cervix had been amputated. Seven abortions followed, and a first and living child was at last obtained after the patient consented to remain in bed from the onset of pregnancy. In the last nine months Dr. Hunter had encountered nine cases of abortion occurring for the first time after amputation of the cervix. He described eighteen cases of labor following cervical operation. In ten the labor was uneventful; in three cesarean section was necessary, in three vaginal cesarean section and in two manual dilation of the cervix. Three maternal deaths followed delivery, all being due to rupture of the cervical stump extending up to the lower uterine segment.

To minimize the danger of cervical plastic operations Dr. Hunter devised a modification of the usual plastic technic for prolapse in young women. It was used in cases of relaxation of all the uterine supports. He made one circular incision about one-half inch above the external os and another from 1 to 1½ inches above this, enabling a complete circle of vaginal skin to be removed. He then performed the customary anterior colporrhaphy and completed by suturing the cervix to the vaginal skin, beginning behind and working round to the front on each side. Thus the Fothergill principle of sliding the uterus upward and backward was maintained but with conservation of the cervix. Sometimes after the operation the uterus tended to remain in the vaginal axis. This could be remedied by opening the anterior peritoneal pouch and stitching the uterus to the peritoneum at the level of the anterior colporrhaphy or by performing Gilliam's suspension operation.

The Registration of Undertakers

In the House of Lords, Lord Horder moved the second reading of the funeral directors bill, which proposed to set up a board to control the training and admission to a register of persons who carried on the business of funeral directors. He said that it was in the public interest that the services rendered should be protected by such a board. Between death and the disposal of the remains there was a period in which no one was responsible, and to remove this anomaly the bill was framed. In recent years there had been a considerable advance in the knowledge, ability and capacity of undertakers. The bill was not well received. On behalf of the labor party Lord Strabolgi said that it would create a monopoly of persons who performed the last rites for the dead. Already the cost was too high. The minister of health should set up some department to watch over the disposal of the dead. The sanitary safeguards, which were one of the objects of the bill, were his duty. Viscount Samuel said that the great proportion of funerals were conducted by persons who were not whole time funeral directors. The effect of the bill on the customs of the village community must be considered. For the government the Earl of Munster stated that he was advised that there is no cogent medical reason for supporting the bill and that it might inflict hardship on poor persons in outlying areas. It was said that the bill would insure that undertakers had proper qualifications and would stop practices which caused pain to relatives, such as touting for orders, but he was advised that, on the contrary, the duties were carried

out tactfully and decently. The government knew of no reason to warrant the conversion of this trade into a closed corporation. Lord Horder said that the bill did not place restrictions on half time undertakers, but in view of what had been said he would not press for a second reading.

The Chemotherapy of Pneumococcic Infections

The flood of articles on sulfanilamide and allied compounds and the success claimed for these new drugs has had no parallel since the introduction of arsphenamine by Ehrlich. There is the difference, however, that arsphenamine and its modifications were recommended for only one disease, while the question now is What are the infections which the sulfanilamide group do not benefit? One of the manufacturers has endeavored to prevent disappointment by giving in his pamphlet pulmonary tuberculosis, syphilis, malaria and typhus as infections for which no benefit is to be expected.

Experimental studies with a new compound 2-(p-aminobenzene-sulfonamido) pyridine, have excited interest. They were made by Dr. L. E. H. Whitby, assistant pathologist, Bland-Sutton Institute of Pathology, and were reported in the *Lancet*. Substances of the sulfanilamide group active against the pneumococcus have recently been described but had the disadvantage of being toxic. The new compound has the great advantage of being relatively nontoxic and yet of protecting the mouse against 1,000 lethal doses of pneumococcus type I and affording considerable protection against the same dose of other types of pneumococcus. It is as effective as sulfanilamide is against hemolytic streptococci. It produces degenerative changes in the capsules of pneumococci. The manufacturers have stated that they have received numerous requests for the new compound but have refused to supply it until sufficiently controlled clinical research enables them to say with confidence in what directions it may be used with advantage.

PARIS

(From Our Regular Correspondent)

June 18, 1938.

Social Insurance and Private Practice

The city of Paris is divided into twenty wards for administrative purposes, and there is a branch medical society for each of these wards. At a special meeting May 18 of the branch society in the grand opera district, devoted to a discussion of the relation of the social insurance organization to the practitioner, a representative of the former, Dr. Martin, reviewed the law in force since 1930 but modified many times since. He pointed out that the government had no intention of making every practitioner a state official and then pleaded for more cooperation on the part of the profession. Dr. Heim de Balsac defended the free practice of medicine; that is, practice without any social insurance laws. He showed how the doctor-patient relation was an individual one and necessitated complete freedom of action on the part of both patient and physician. He strongly criticized the manner in which the law was carried out by the social insurance authorities and said that their disbursing offices insisted on an incredible amount of paper work. Furthermore, the fees allowed physicians for the medical care of the insured were ridiculously inadequate. Only hospitals which had made a contract with the social insurance organization could receive the insured, and they were very poorly paid. Patients were being driven away from physicians' offices and noncontract hospitals because they were compelled to be cared for by contract hospitals and dispensaries. This tendency on the part of social insurance to give medical care for practically nothing to one half of the population impressed the medical profession as inadmissible and not based on any social or valid legal principles. The speaker demanded that the disbursing offices which reimbursed the insured for medical, surgical, obstetric or dental attention should put a stop to this nefarious policy and attempt to collaborate in a loyal way with the profession.

Gonorrhea in the Female

The seventh French gynecologic congress was held at Nice under the presidency of Prof. Emile Chauvin of Marseilles. Almost the entire meeting was devoted to papers on gonorrhea in the female. Its relation to sterility was discussed by Dr. Claude Béchère of Paris, who reported having found endotubal lesions in 75 per cent of cases of sterility. In from 36 to 72 per cent they were due to chronic gonorrheal infection, which is responsible in 58 per cent of cases of sterility due to tubal occlusion. Tubal occlusion in turn is the cause in 50 per cent of all cases of sterility.

Dr. Maurice Fabre of Paris and his co-workers stated that it was necessary to keep constantly in mind the most common localizations; viz., the urethra, the cervix, Skene's glands and the rectum. Although much had been expected of vaccine treatment, this had not proved to be of much help. The present tendency to treat complications such as salpingitis conservatively had much in its favor. Even if operation became unavoidable, every effort should be made to conserve the ability of the patient to become pregnant and to menstruate. Vulvovaginitis and urethritis in adults were greatly benefited by diathermy. No better treatment had been found for skenitis and endocervicitis of gonorrheal origin than electrocoagulation. Radiotherapy in weak doses gave marked relief in cases of acute salpingitis. Of all physical methods, pyretotherapy, especially when short wave apparatus was employed, had yielded the best results until the advent of chemotherapy. In the discussion, Dr. Koenig of Geneva endorsed conservatism in the treatment of salpingitis, having observed a decided diminution in the virulence of the infection following expectant treatment. He had also employed radiotherapy and believed that operative intervention had been avoided as the result of its use. Dr. Loeser of London was enthusiastic regarding the use of cultures of gonococci, basing his conclusions on over 10,000 intradermal injections. He reported a cure in from 80 to 85 per cent of cases, complications having been observed in only 0.06 per cent, as compared to 0.27 per cent after the generally adopted methods of treatment. The intradermal injection of cultures produces an active immunization. Drs. Halphen, Auclair and Dreyfus of Paris employ a short wave apparatus for pyretotherapy. They raise the temperature to 41 C. (105 F.) for a total of fifteen hours, no treatment being less than four hours in duration. Their results have been highly satisfactory. Dr. Claude Béchère read a paper on diathermy and electrocoagulation in the treatment of gonorrhea in the female. A preliminary course of diathermy of the entire genital tract should be given, to last one month; then exocervical and endocervical electrocoagulation by the mono-active bipolar method should be used. In the third series of treatments, diathermy must again be given over the entire genital tract. This method has yielded the best results during the past four years at his clinic.

Dr. J. E. Marcel insisted on a different conception of localization of gonococci in vulvovaginitis in children. The urethra, cervix and often the rectum are also involved. The treatment of gonorrheal vaginitis in children with estrogenic substance has met with much opposition so far in France because of the fear of a harmful influence on the later evolution of the ovary. The author reported sixty-four cases treated with sulfanilamide. In some the disappearance of the gonococci took place rapidly; in others no result was obtained or there were recurrences. There were thirty-nine cures in sixty-four children. Drs. Gate, Michael and Delbos of Lyons reported the use of estrogenic substance in ten cases of gonorrheal and eighteen cases of non-gonorrheal vulvovaginitis in children. The results were satisfactory, especially when the condition was of gonorrheal origin, cure being obtained in eight of the ten cases.

The next congress will be held in Lille in the spring of 1939 under the presidency of Professor de Snoo of Utrecht, Holland.

BERLIN

(From Our Regular Correspondent)

May 23, 1938.

Meeting of German Society of Pediatrics

The German Society of Pediatrics met this year partly with the internists and partly by itself. Prof. Franz Hamburger, Vienna ordinarius, was chairman. The principal report, on "Convulsions in Childhood," was read by Walter Birk of Tübingen. He ascribed the predisposition in early childhood to convulsive attacks to various factors: cerebral injuries during birth with persistent lesions, the immaturity of the brain, the retarded development of the cortical region, the physiologic preponderance of the basal ganglions (pallidum) at this time of life and the peculiar significance of this cerebral region for convulsive attacks. A final consideration is frequent encephalitic foci which have defied diagnosis. In children beyond the nursing stage, spasmophilia and epilepsy have the most important roles. Between these two types of disorder are the so-called intermediate convulsions; e. g., tantrums and fever convulsions. The congress then discussed early spasmophilia of the newborn and late spasmophilia; namely, all cases of nursing spasmophilia which persist for years. Transition from spasmophilia into epilepsy does not occur. The term "circumstantial convulsions" is applied to attacks based on constitutional asthenia, disturbance of the vasomotor system and other nervous disorders, which are manifested under certain circumstances; e. g., excessive bodily fatigue, unusual mental strain and protracted standing in one spot. Pyknolesy belongs to the last-mentioned class of convulsive states; it appears in its most classic form among children, continues for years, is manifested daily in many cases and tends to disappear completely. There may be a transition from pyknolesy into epilepsy.

Willibald Scholz, Munich brain pathologist, discussed the pathology of the problem. It has not been possible to link any specific type or location of birth injury with the production of a specific type of convulsive state. Anatomy, physiology and so on furnish no satisfactory explanation for general predisposition to convulsions, although particular data are abundant in the literature. Scholz took up numerous pathologic details. At any rate, he said, we know that the vasomotor disturbances coexistent with convulsions may produce severe injuries to the brain. No cerebral lesions are demonstrable in simple loss of consciousness, pyknolesy attacks and twilight states of epilepsy.

Georg Schaltenbrand of Würzburg said in the general discussion that in many cases of manifest epilepsy in adults there had been no anamnesis of epilepsy in youth.

A further chief topic was antirachitic prophylaxis. It has become recognized that the high incidence and importance of rickets call for general preventive measures against the disease. Artificial ultraviolet irradiation is conceded to be effective; the administration of vitamin D in milk is considered conditionally effective. Both of these methods, however, are too elaborate and costly for general use. Accordingly the administration of pure vitamin D is recommended above all as speedily effective and generally practicable. It was suggested that a national center for the campaign against rickets be established, the aims of which would be to protect every German child against the disease and to institute early treatment of rickets already developed. In the discussion the need for a more efficient prophylaxis was conceded. Rott of the national health bureau declared that incipient rickets must above all be brought under treatment. Supplementary prophylactic measures also are necessary. The groups most imperiled by rickets are infants born in the spring or summer and all children over 1 year of age with a debilitated constitution. In addition to the other measures suggested a systematic check-up of all nurslings for signs of rickets ought to be instituted.

Society for Study of the Circulation

The German Society for Study of the Circulation met in annual convention in March at Bad Nauheim. The chief topic was collapse and related pathologic conditions. Frau Gollwitzer-Meier spoke on the experimental pathology of circulatory collapse. The many definitions of collapse, which never correspond with one another, compel us to place in the foreground not the definition itself but the precise observation of the manifestations. Today a majority of investigators regard the formerly differentiated conditions of shock and collapse as belonging to the same clinical picture. In the pathogenesis of collapse the central circulation or the peripheral circulation may be principally involved, and humoral and nervous factors may also be differentiated. Among humoral factors histamine seems to play a conspicuous part, along with thickening of the blood and functional failure of the adrenals. The principal symptom of collapse is the decrease of the volume of blood in circulation, which in turn produces a diminution of the venous backflow. In collapse following trauma the histamine value is heightened in the venous blood of the injured parts. In collapse following burns an increase in the blood histamine is likewise demonstrable, so in both these conditions the substance must be of particular significance. Histamine causes first an ephemeral increase in minute volume, after which, because of the peripheral effect on the vascular wall, there is a decrease in minute volume accompanied by a fall in the blood and the venous pressure. Histamine exerts a constrictive effect on the large blood vessels. In the liver it induces contraction of the hepatic vein, but this cannot be the essential factor in shock, since histamine shock can be produced even after removal of the liver. In addition, histamine tends to irritate the terminal apparatus of the vagus within the heart. Furthermore, in collapse a decrease in the oxygenation of the arteries is demonstrable. Certain conditions favor the onset of collapse; e. g., narcosis, probably as a result of the concomitant capillary dilatation. In collapse one observes a decrease in body temperature that corresponds to the decrease in minute volume, as the production of heat is closely related to the circulation. The p_{H} of the blood also declines in collapse, and it remains depressed even after the blood pressure has risen.

Siebeck of Berlin discussed the clinical significance of collapse, reviewing the symptoms and referring, among other things, to the special role of the adrenal glands in collapse, as illustrated by the characteristic states of collapse in Addison's disease. The hypophysis, too, plays an important part in collapse. The cause of a collapse may be of cardiac origin, as, for example, in cardiac infarction and in postoperative collapse in cases of exophthalmic goiter. In the diagnosis of collapse it is often difficult to distinguish between a cardiac and a peripheral origin. Among signs of collapse based on heart failure are cyanosis, congestion, gallop rhythm and dilatation of the heart. Signs suggestive of peripheral circulatory failure are plasma deficiency, thickening of the blood, diminution of sodium chloride in the urine and abnormal turgor of the skin. First therapeutic measures are placing of the patient in a recumbent position, application of heat to the body, bandaging of the lower extremities, administration of brandy, applications to the precordial area and, especially for nocturnal attacks, administration of camphor. The most important measure is the intravenous administration of fluid infusions of sugar and sodium chloride. Massive blood transfusions are indicated for increase in the circulatory volume. Inhalation of a mixture of carbon dioxide and oxygen stimulates respiration and leads to evacuation of the blood depots. In any case circulatory collapse calls for an intensive, active offensive in which the most diverse procedures are utilized.

Kirschner of Heidelberg discussed the surgical aspects of collapse. He differentiated several types of collapse: 1. Collapse may take the form of heart failure with congestion and cyanosis. 2. There is vascular collapse. 3. Nervous collapse is a form. 4. Collapse may be due to loss of blood. 5. Collapse

takes place during operation, often induced by latent lesions; postoperative fatalities are usually due to collapse. Prophylaxis consists in timely support of the circulation and precautions against chilling, loss of blood and starvation before the operation. Undue exertions, e. g., walking to the operating room and too early getting up after operation, are to be avoided. 6. Patients are in particular danger of collapse who have sustained trauma of the thorax, abdomen, spinal cord or brain. If collapse threatens, the surgical intervention should be reduced to a necessary minimum or performed in two stages. Use of the electric knife is also recommended. Other important remedies are stimulation of peristalsis by means of the intestinal tube and by injections of solution of posterior pituitary, as well as by complete abolishment of pain. An important consideration is the type of narcosis employed; rectal narcosis or intravenous narcosis is often safer than other types. 7. Collapse is especially likely to occur in a patient under lumbar anesthesia; the more extensive the anesthesia the greater the danger. Collapse readily appears in the presence of gas phlegmon and of suppurative processes within the thoracic and abdominal cavities, because of the extensive areas of toxic absorption.

On the second day Eppinger of Vienna discussed "Modifications of Permeability of the Capillaries," on the basis of his investigations of histamine collapse. By means of a new technique of staining the author was able to demonstrate the proteinic nature of the fluid in the tissues during collapse. The capillary membranes become permeable for protein during histamine collapse. In severe gastroenteritis severe changes occur in the hepatic capillaries which lead to an outflow of protein from the blood into the perivascular interstitial clefts and to serious destruction of liver cells. Furthermore, this serous inflammation can lead to acute yellow atrophy and to cirrhosis of the liver. It therefore seems probable that through the production of severe vascular lesions the serous inflammation may represent the initial stage of cirrhosis of the liver. Vascular damage is also demonstrable in man in the vessels of the extremities. Permeability of the ions too is altered. In contrast to the normal condition, one finds during anaphylactic shock that a large amount of potassium is present in the body serum and a small amount of sodium is present in the cells. The emigration of potassium and the influx of sodium produce the picture of cloudy swelling. Similar processes take place in the musculature during fatigue. Thus, Eppinger concluded, there are gradual transitions from fatigue to inflammation to death.

BUDAPEST

(From Our Regular Correspondent)

May 19, 1938.

Fever Treatment of Neurologic Conditions

During the national medical week, Dr. Stephan Somogyi reported the experience of the Budapest neurologic and psychiatric clinics in the fever treatment of mental and nervous diseases of more than 1,000 patients. Hyperpyrexia was induced in 873 instances: with malaria in 550, with drugs in 135 and with injections of milk in 188. Malaria therapy proved the most efficacious. Somogyi holds that the hyperpyrexia itself is the most important factor. In the treatment of manic-depressive psychosis, schizophrenia and epilepsy there were no conclusive results. With tabetic dementia paralytica some improvement of symptoms was noticeable, chiefly relief from the lancinating pains and the crises; with the chronic forms of epidemic encephalitis and with disseminated sclerosis the results were poor. In contrast, fever therapy was effective in the treatment of chorea minor, dementia paralytica, acute trigeminal neuralgia, acute peripheral facial paralysis and sciatica.

Industrial Cutaneous Diseases

A Hungarian public health journal directs attention to a number of special industrial diseases of the skin encountered in Hungary. Anthrax is found in tanneries and brush factories.

Chrome ulceration resulting from the handling of sodium and potassium bichromate, used in dyeing, is well recognized; the earliest symptoms are boils, pimples or eczema; the final ulcers occur on the mucous membrane, e. g., of the nose, as well as on the skin of the hands. Cutaneous diseases in the form of eczema are common among workers with aniline dyes; they are often accompanied by blepharitis, conjunctivitis and onychia. Rules enjoining strict personal cleanliness resulted in improvement in a factory which was kept under careful supervision. Workers in arsenic, much used as a coloring agent in some industries and in wallpapers, often have an eruption, with ulceration when it is neglected; the hands, forearms, neck and nostrils are affected chiefly and the thighs, feet and serotum occasionally. Laundry women's eczema is due to the strong alkalis, or bleaching solutions, used in laundry work; infection may result also from the handling of infected clothes. Flax spinners are subject to an eczema which is ascribed to oils in the flax. Chemical manufacturers and druggists are exposed to many irritating substances, of which quinine is mentioned as often being responsible for dermatitis. Lime juice makers and persons handling bitter oranges are subject to a form of dermatitis which may be complicated by headache, neuralgia, giddiness and cramps. The list of workers subject to special cutaneous diseases includes bronzers, electroplaters, matchbox makers, polishers, cabinet makers, glue makers, brush makers, leather dressers, tanners, furriers, plasterers, steel grinders, smelters, cement makers and tar workers.

AUSTRALIA

(From Our Regular Correspondent)

June 1, 1938.

National Health Insurance Difficulties

A deadlock has arisen between the medical profession in Australia and the federal government. Before the introduction of the national health and pensions insurance bill, the executive of the federal council of the British Medical Association agreed to certain of the government's proposals in the bill, including the acceptance of a capitation fee of 11 shillings per annum for all insured persons. It was made clear at the time, however, that the federal council could not bind its members by any agreement that had been reached and that, in any matter with such a wide scope as national insurance, members of the association throughout Australia ought to be consulted. The members have now made it clear that there is a great deal of opposition to some of the provisions of the bill, and certain amendments have been suggested to the government. The government, on the other hand, refuses to alter its original plans.

The main bone of contention concerns the amount of the capitation fee. It is considered by members of the medical profession that the 11 shilling fee is quite inadequate remuneration for a general practitioner service in this country and that 14 shillings per annum in metropolitan areas and an additional 25 per cent per annum in country districts are the minimum rates acceptable to the profession. Proposed mileage rates are also considered unsatisfactory. The present proposal allows a practitioner one trip a year to each insured patient at the rate of 1 shilling per mile (after 3 miles) whether the trip is made or not. The profession has suggested a minimum rate of 2s. 6d. per mile (one way only) for every trip made, sixpence of which should be payable by the patient. Under lodge contract practice in Australia, mileage is always payable by the patient as a deterrent against unnecessary calls. There is universal dissatisfaction with regard to the absence of night fees. It is thought that some fee, not necessarily large—2s. 6d. is suggested—should be charged for night calls, to act as a restriction on the amount of night work. Finally, a clear definition of general practitioner service is required.

The government has refused to make these amendments or even to consider temporary acceptance of the original proposals

by the profession pending adjustment after several years' trial, on the ground that such alterations would interfere with the actuarial basis of the scheme. Nevertheless, two major amendments have been made affecting other sections of the community: the extension of benefits to dependents through a voluntary scheme, at an estimated cost to the government of £175,000 a year, and an increase in pension payments for women. The profession has also taken a firm stand in the matter. Plebiscites taken in several of the states show a large majority against the acceptance of the 11 shilling capitation fee, and many local branches of the British Medical Association have stated that their members are not prepared to work under the scheme as at present proposed. It has been calculated that if the scheme was in operation an average practitioner's net income would approximate £665 per annum. This reckoning has taken into consideration all sections of the community and probable sources of income. This income is not high in a profession so costly to enter and in which hours are so unlimited. Cooperation between the government and the medical profession is essential if national insurance is to be successful.

Sir Walter Kinnear Called to America

Sir Walter Kinnear, expert on British national insurance, who is now at Canberra, has been requested by the United States government to offer his advice concerning difficulties which have arisen in the administration of the United States social security act. He will probably leave for Washington, D. C., as soon as the commonwealth national health and pensions insurance legislation has been passed. Sir Walter was in charge of the British national insurance department when he came to Australia, two years ago, to report on a similar scheme for this country. He retired on his return to England, and his services were then obtained by the commonwealth to assist in the drafting of the legislation now before parliament. Sir Walter Kinnear has marked ability and extensive experience in the administration of national insurance; the chief Australian criticism of his outlook is that he has endeavored to fit rather too closely the details of the British system to Australia. It is claimed by persons who have studied conditions in both countries that the general standard of medical practice is higher in Australia than in Great Britain. There has never been any medical practice in Australia comparable to that of the cheap "club" doctors who used to exist in Britain, and anything would have been an improvement on such practice. There is a general feeling that national insurance may tend to lower the Australian standard of general practice if British conditions are too rigidly imposed.

Marriages

DANIEL HERTZ FUNKENSTEIN to Miss Hannah Bessie Harris, both of Macon, Ga., in Jacksonville, Fla., June 21.

OTTO S. DOWLEN JR., Miami Beach, Fla., to Miss Richardine Massey of Birmingham, Ala., June 21.

ARTHUR F. TOOLE, George School, Pa., to Miss Barbara Reagan in Brookline, Mass., June 18.

SAMUEL GWYN MOUNGER, Yazoo City, Miss., to Miss Catherine Davis in Oxford, June 18.

WALTER JEROME LEE to Miss Lenore McFall, both of Nashville, Tenn., at Winchester, June 25.

CLARK HOUSTON GILLESPIE to Miss Orlean Lowry Drennen, both of Birmingham, Ala., in June.

VICTOR B. LAMPKA to Miss Emily Patricia Swierczynska, both of Buffalo, July 12.

JAMES ALANSON MOORE, Boston, to Miss Eleanor MacLeod of New York recently.

DORIS E. JOHNSON, Youngsville, Pa., to Mr. Raymond L. Fales, April 15.

JOHN B. VARNER to Miss Theodore Davis, both of Atlanta, Ga., in June.

Deaths

Henry T. Williams * Rochester, N. Y.; University of Pennsylvania Department of Medicine, Philadelphia, 1881; fellow of the American College of Surgeons; at one time secretary of the Rochester Academy of Medicine; consulting surgeon to St. Mary's and Monroe County hospitals and Monroe County Penitentiary; honorary surgeon to the Rochester General Hospital; aged 80; died, April 26, of chronic myocarditis.

John Champlin Jr., Westerly, R. I.; Tufts College Medical School, Boston, 1922; member of the Rhode Island Medical Society; fellow of the American College of Surgeons; at one time chairman of the state public health commission; secretary and past president of the Washington County Medical Society; on the staffs of the Westerly Hospital and of the South County Hospital, Wakefield; aged 41; died, May 2.

Jennings Meade King * Pittsburgh; Western Reserve University Medical Department, Cleveland, 1921; member of the American Academy of Orthopedic Surgeons; demonstrator in orthopedic surgery, University of Pittsburgh School of Medicine; aged 39; on the staffs of the Presbyterian Hospital, Children's Hospital and the Western Pennsylvania Hospital, where he died, April 8, of pneumonia.

Albert Jefferson Caldwell, Amarillo, Texas; Kentucky School of Medicine, Louisville, 1892; member of the State Medical Association of Texas; past president and secretary of the Potter County Medical Society; served during the World War; aged 70; on the staff of the Northwest Texas Hospital, where he died, May 7, of carcinoma of the pancreas.

Charles Jeffry Pick * New York; Bellevue Hospital Medical College, New York, 1896; member of the American Society of Anesthetists; on the staffs of the Mount Sinai, Sydenham, Jewish Memorial and the Beth David hospitals and the Hospital for Joint Diseases; aged 63; died, April 22, of carcinoma of the gallbladder with metastases.

Wesley Cornelius Redd, Youngstown, Ohio; University of Pennsylvania School of Medicine, Philadelphia, 1917; member of the Ohio State Medical Association; served during the World War; aged 49; died, April 16, in St. Elizabeth's Hospital of chronic myocarditis, aortitis, chronic nephritis, hypertension and pneumonia.

Bert E. Loehr, San Jose, Calif.; Hahnemann Medical College and Hospital of Philadelphia, 1909; member of the California Medical Association; past president of the Santa Clara County Medical Society; aged 56; on the staffs of the Santa Clara County Hospital and the San Jose Hospital, where he died, April 12.

Orville Joseph Sloan * Glendale, Calif.; University of Nashville (Tenn.) Medical Department, 1907; fellow of the American College of Surgeons; on the staffs of the Physicians and Surgeons Hospital, Glendale, and the Los Angeles County General Hospital; aged 52; died, April 30, of myocarditis and arteriosclerosis.

Benjamin Richard Johnston, Cedar Rapids, Iowa; Hering Medical College, Chicago, 1893; at one time professor of theory and practice of medicine and clinical medicine at the State University of Iowa College of Homeopathic Medicine; served during the World War; aged 71; died, April 13, of cerebral thrombosis.

Adrian Richard Alfred * Medical Director, Captain, U. S. Navy, retired, Long Beach, Calif.; University of Michigan Department of Medicine, Ann Arbor, 1889; veteran of the Spanish-American and World wars; entered the navy in 1890 and retired in 1928; aged 73; died, April 17, of coronary occlusion.

Edward Schifferle * Creston, Iowa; Rush Medical College, Chicago, 1884; an Affiliate Fellow of the American Medical Association; for many years connected with the relief medical employment and pension department of the C. B. & Q. Railroad; aged 80; died, April 16, of cholecystitis with cholelithiasis.

John Ritter * Miami, Fla.; Rush Medical College, Chicago, 1880; assistant professor emeritus of medicine at his alma mater; member of the Illinois State Medical Society; author of "Handbook of Tuberculosis for Medical Students and Practitioners of Medicine"; aged 84; died, May 23, in Springfield, Ill.

Charles Byron Drake, West Lebanon, N. H.; Dartmouth Medical School, Hanover, N. H., 1883; member of the New Hampshire Medical Society; at various times a member of the state legislature, board of education and state board of health; school physician; aged 89; died, April 2, of pneumonia.

Jonathan Mellen Mansfield, Clinton, Iowa; State University of Iowa College of Medicine, Iowa City, 1917; member of the Iowa State Medical Society; served during the World War; aged 45; on the staff of the Jane Lamb Hospital, where he died, April 28, of uremia and nephritis.

Milo Orion Brush * Shenandoah, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1908; served during the World War; member of the board of education; on the staff of the Hand Memorial Hospital; aged 53; died, April 23, of lobar pneumonia.

Harry Cryndlon Buster, Baldwin, Mich.; Northwestern University Medical School, Chicago, 1910; member of the Michigan State Medical Society; served during the World War; aged 57; died, May 15, in Chicago, of essential hypertension and cerebral hemorrhage.

Ida Catura Coler, Long Beach, Calif.; Woman's Medical College of Baltimore, 1888; University of Michigan Homeopathic Medical School, Ann Arbor, 1899; aged 81; died, April 13, in the Scaside Hospital, of pulmonary edema, cerebral arteriosclerosis and thrombosis.

Oliver Kidwell Speer, Tamaqua, Pa.; Medico-Chirurgical College of Philadelphia, 1894; member of the Medical Society of the State of Pennsylvania; served during the World War; aged 67; died, April 23, in the Jefferson Hospital, Philadelphia, of carcinoma of the esophagus.

Elmer Llewellyn Dickey * Oil City, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1894; fellow of the American College of Surgeons; served during the World War; on the staff of the Oil City General Hospital; aged 72; died, April 4, of heart disease.

Daniel Armstrong Atkinson * West View, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1901; county medical director; aged 62; on the staff of the Suburban General Hospital, Bellevue, where he died, April 3, of agranulocytosis.

Edward Augustus Sheafe * Ottumwa, Iowa; State University of Iowa College of Medicine, Iowa City, 1894; past president of the Wapello County Medical Society; formerly city physician; aged 76; died, April 18, of uremia.

Melvin Pirl Badger * Manchester, N. H.; University of Vermont College of Medicine, Burlington, 1909; served during the World War; on the staff of the Notre Dame Hospital; aged 51; died, April 23, of pulmonary thrombosis.

Ralph James Critchfield, Fargo, N. D.; University of Minnesota Medical School, Minneapolis, 1922; served during the World War; aged 48; died, May 3, in the Veterans Administration Facility, St. Cloud, Minn., of pneumonia.

Eugene Martin Holden, Otisfield, Maine; Harvard University Medical School, Boston, 1890; member of the Massachusetts Medical Society; aged 77; died, April 9, in Cambridge, Mass., of lobar pneumonia and arteriosclerosis.

James Arnot Walker, Youngstown, Ohio; Jefferson Medical College of Philadelphia, 1918; member of the Ohio State Medical Association; aged 49; was found dead, April 5, of acute dilatation of the heart and endocarditis.

Christopher C. Gardner, Braddock, Pa.; University of Pittsburgh School of Medicine, 1909; served during the World War; on the staff of the Braddock General Hospital; aged 51; died, April 29, of coronary thrombosis.

Maurice Joseph Spiegel * Los Angeles; University of Illinois College of Medicine, Chicago, 1932; aged 39; died, April 21, in the Cedars of Lebanon Hospital, of injuries received when struck by an automobile.

Isaac Barton, Philadelphia; Jefferson Medical College of Philadelphia, 1877; member of the Medical Society of the State of Pennsylvania; aged 81; died, April 2, of angina pectoris.

Anthony Juliano, Philadelphia; Maryland Medical College, Baltimore, 1912; aged 49; died, April 7, in the St. Luke's and Children's Hospital of gangrene of the right foot and leg.

Louis von Cotzhausen, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1885; aged 84; died, April 24, in the Hahnemann Hospital, of pneumonia.

Margaret Caldwell, Waukesha, Wis.; Woman's Hospital Medical College, Chicago, 1876; member of the State Medical Society of Wisconsin; aged 92; died, May 4, of senility.

Thomas B. Turner, Swedesboro, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1875; aged 90; died, April 6, of pneumonia and prostatitis.

Eugene Underhill, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1893; aged 77; died, April 4, of uremia.

Correspondence

CONTROL OF MENINGITIS

To the Editor:—The article on the "Control of Meningococcal Meningitis Epidemics" by Dwight M. Kuhns and others in the February 12 issue of *THE JOURNAL* will provide clues for future study in preventive medicine. However, the article did not lead to any definite conclusions as to the value of a program of active immunization in a closed population group. According to the article, forty-eight different camps were involved with an average population of 152 per camp. In table 3, twenty different outbreaks were listed: in nine, or 45 per cent of the series there occurred only a single case. Does such an incidence constitute an epidemic, or could not one anticipate such a rate to occur by chance in any other comparable group under similar circumstances? Estimates have been made that from 2 to 5 per cent of the population in camp enrollees are normally carriers and that the attack rate in any population is approximately 1 per cent. In table 3 attack rates varied from a low of 0.21 per cent to a maximum of approximately 5 per cent. Closer scrutiny of the figures showed that in only five instances had the attack rates exceeded approximately 1.5 per cent. Consequently in 75 per cent of the outbreaks cited the attack rates were within approximately normal limits. In another paragraph the authors cited the occurrence of three cases in a group of 1,612 plus-minus and negative reactors. This is an attack rate of only 0.18 per cent, well within the normal limits and truly not a significant comparison when contrasted with the failure of cases to occur in the actively immunized group.

If complete active immunization required a total of sixteen days (four doses at four day intervals), a period within the average incubation period of the disease, and if during this period other factors for the control were presumably instituted, was it correct to assume that active immunization by the toxin was responsible for the subsidence of the outbreak? Could not isolation management of the clinical cases and of the suspected carriers, the correction of overcrowding, wider floor space between beds and improvement of the general hygienic and sanitary conditions all have contributed to the control? What would have been the attack rate if the same program had been followed without the active immunization?

Dr. Kuhns and his co-workers stated that twenty-six cases occurred in a period of two years prior to instituting their active immunization program, and none since. It would be of interest to ascertain whether all of the enrollees in the various camps were permanent members during that entire period or if there were new additions to the camp population from time to time to replace those discharged. Is it not possible to conceive that many of the new members were not necessarily susceptible to the disease? Some of the new enrollees might have developed various degrees of immunity resulting from subclinical infective doses in the general population prior to their enlistment, and consequently the population groups were not truly comparable. Furthermore, what changes had occurred in the various camp managements as to sanitation, hygiene, overcrowding, the building up of the resistance of the population and so on during the past two years, besides the immunization program instituted? Did not all these factors play a role, and the immunization program serve only as an adjunct? Cognizance must be taken that outbreaks of epidemic meningitis occur in cycles. It would be of value to ascertain for comparative purposes the general attack rate of the disease throughout the United States and in the various states in which the camps were located.

In two outbreaks cited by the authors (Boys' Training School in Oklahoma and the Kansas City Boys' Orphanage) they state ". . . this illustrates the use of the toxin in both an explosive

and chronic type of outbreak." What is meant by a chronic type of an outbreak; did it denote a normal expectancy of occasional cases and, if so, what was considered the average per year? Has the use of the toxin indicated its true value? The authors concluded with the statement ". . . therefore it is important that every control measure available be used as early as possible after the appearance of the first case." Under such circumstances, can any active immunization program be given complete credit for the control of an outbreak of epidemic meningitis?

In table 2 the question was raised as to the value of immunization. If in a group of 3,773 cases immunized only 1,163, or approximately 33 per cent, resulted in negative reactions, was such a procedure of value? For the purpose of prophylaxis during an outbreak, all plus-minus reactors would have to be included with the group that gave a one plus or greater reaction. Consequently instead of 78.9 per cent change from positive to negative reactors as cited there were approximately 67 per cent positive reactors who must be considered susceptible to the disease, as determined by the cutaneous test. It is important to ascertain how soon protection begins after immunization has been completed and what the duration of such protection is.

The total camp enrolment was arbitrarily segregated into two classifications, namely, (1) those enrollees who showed a one plus or greater reaction (3,926) and (2) those who gave a negative result (3,413) and who apparently were considered the control group. The value of the effectiveness of the immunization program would have been enhanced if a control series had been established among the group of positive reactors. As a result, if one half of the positive reactors, approximately 1,963, could have been immunized and a similar number of the positive group nonimmunized, the latter would have served as actual controls. Consequently, if these two groups of former positive reactors had been retested in two months (one group immunized and the other not) it would have been possible to determine the difference in the percentage of those giving a reaction of one plus or greater, a plus-minus or a negative result. Under these circumstances, if the percentage of negative reactors had been significantly greater in the immunized group than in the immunized group of the previously positive reactors, the value of prophylactic immunization would probably have been proved.

Comparison of the percentages of the case incidence in the immunized and the nonimmunized groups were indeed instructive and enlightening. In the group of 3,773 patients immunized no cases occurred, a result of 100 per cent. In the non-immunized group of 3,566 cases (the difference between 7,339 patients tested and 3,773, the number of patients immunized), there occurred twenty-six cases, a result of 99.5 per cent. Surely such a small difference can be of no significance in the evaluation of the final results.

I wish to cite Riding and Corkill (Prophylactic Vaccination in Epidemic Meningococcal Meningitis, *J. Hyg.* 32:2 [April] 1932) and their work on immunization in epidemic meningitis. In an outbreak studied in the North Sudan district they had the opportunity to observe the effects of such a program in a more or less closed population group. In the cities of Deims and Khartoum of a total of 9,713 people who were inoculated with vaccine A (type 2, the predominating strain) there occurred seven cases and five deaths, while in a group of 9,720 inoculated with vaccine B (typhoid and paratyphoid A and B) there were ten cases and seven deaths. The authors say "In Khartoum City no cases or deaths from meningococcal meningitis occurred among the subjects inoculated with the meningococcal vaccine (vaccine A), while there were 1.06 cases and 0.71 deaths per 1,000 from the disease among those inoculated with the T. A. B. vaccine (vaccine B), a result apparently favorable to the use of vaccine A as a prophylactic.

When the figures are subjected to statistical analysis, however, it is found that the standard deviation is 1.731 and the difference between the number of cases in the two groups is less than twice the standard deviation, giving odds against the result being due to errors of sampling of less than 22 to 1. The absence of significance in this finding is supported by the result in Deims, where there were 0.98 cases and 0.70 deaths per 1,000 in the vaccine A group, and 1.01 cases and 0.72 deaths per 1,000 in the vaccine B group; that is, no appreciable difference between the two groups." Consequently, prophylactic vaccination as applied under strictly experimental conditions in an epidemic proved ineffective as a means of controlling the disease.

How much reliability can be placed on the cutaneous test? Is it of a specific and of a diagnostic significance? If during the procedure the strength of the toxin is increased from 1:200 to 1:20, does one obtain an accurate picture? What is the basis for the amount and the strength of the toxin used intradermally? When the former dilution was used, the proportion of positive reactors was 53 per cent but when the stronger dilution (1:20) was substituted the proportion of positive reactors increased to 99 per cent. Does the reaction to the toxin constitute the degree of susceptibility? Is it not possible that the increased percentage of positive reactors thus observed was only an indication of the reaction to the strength of the toxin used? Can the tolerance that a normal individual demonstrates to the strength of the injected dose serve as a basis of susceptibility of the host to the disease? A positive reaction does not necessarily indicate that such a reactor will become a clinical case but is merely susceptible. Due consideration must be given to the virulence and invasive power of the organism and its infective dosage as well as to the resistance and susceptibility of the host.

I believe that, first, active immunization is of questionable value during impending outbreaks of epidemic meningitis as shown by statistical comparison. Equally good results can be obtained by proper isolation management and by improvement of the sanitary and hygienic conditions of the area and population in question.

Second, the cutaneous test as cited by the authors changed positive to negative reactors in only 33 per cent of cases, not a significant rate during times of an outbreak.

Third, one significant factor must not be overlooked; namely, the carrier problem. If the chronic intermittent carrier can be detected and isolated, an outbreak may cease as abruptly as it began.

Finally, one must determine what constitutes an outbreak of epidemic meningitis. Therefore a great deal more work remains to be done in the control of epidemic meningitis, before any definite conclusions are warranted concerning the use and value of active immunization with meningococcus soluble toxin.

GEORGE PARRISH, M.D., Health Officer,
Los Angeles City Health Department.
By HYMAN I. VENER, M.D., C.P.H.,
Assistant Epidemiologist.

This letter was referred to Dr. Kuhus, who replies:

To the Editor:—Theoretically the suggestions of Drs. Parrish and Vener for the control of epidemic meningitis appear quite plain, but practically we found that, after applying the sanitary control measures mentioned by Dr. Vener and outlined by us in our preliminary report July 4, 1936, in *THE JOURNAL*, additional cases continued to occur. Apparently Drs. Vener and Parrish did not possibly read or see our preliminary report. In that paper practically all the questions they have suggested have been answered at some length. In the preliminary report we showed that isolating all the carriers would be difficult if not impossible. We found almost as many carriers in a control camp as we did in the epidemic camp.

Recently Rake's experience in culturing (*J. Exper. Med.* 61:545 [April] 1935) from the Rockefeller Institute was interesting. He found ninety-seven positive carriers in 215 CCC enrollees. (The number of carriers found usually is in direct proportion to the intensiveness of the culturing.) After finding all these positive carriers, their final solution to the control of the epidemic was to send all the enrollees to their respective homes.

Lieutenant Colonel Simmonds states that during the World War their experience demonstrated the futility of culturing and isolating all the carriers.

Dr. Rosenau summarizes the present status of sanitary control measures and culturing as means of control of meningitis much in accordance with the views of administrators I have known both in and out of the army. He says:

In military practice, the isolation of meningitis carriers is not only extravagant and against military efficiency, but also impractical and ineffective.

We must frankly admit that when cerebrospinal meningitis has not become epidemic it cannot be stamped out by any known means of practical application.

This does not mean that we should assume a supine attitude, for, even though the disease cannot be satisfactorily controlled, a certain number of secondary cases may be prevented. Vaccines have been tried, but their usefulness has not been established. The procedure is logical and deserves extended observation. Agglutinins develop in the blood of those vaccinated.

The following is some of the evidence why we believe and still believe that meningococcus soluble toxin will aid in raising the immunity of the individual:

1. The individual himself by recovering from the disease is able to produce sufficient immunity to recover from a disease produced by a specific organism.

2. Meningococcus antitoxin serum has been found to be effective by Hoyne of Chicago in reducing a mortality from 50 per cent to 10 per cent in meningococcal meningitis. If an active immunity can be produced in horses and that serum cause a recovery in human beings it would indicate that an active immunity might be brought about in man.

3. Ferry in 1931 found that animals could be protected both by passive and by active immunity against meningococcal infection.

4. Dr. John A. Kolmer has recently reported (*Am. J. Clin. Path.* 8:1 [Jan.] 1938) his results in protection of experimental meningococcal meningitis by the use of whole broth culture (vaccine and soluble toxin) which we mentioned in our preliminary report.

Against lethal doses of meningococcus he protected 23 per cent of guinea pigs and 46.4 per cent of rabbits. Against symptoms he protected 77.0 per cent of monkeys. A study of his report presents no evidence why immunity in man cannot also be produced.

5. In our preliminary report (table 7) we showed that a patient with a positive cutaneous test at the onset of the disease was negative on recovery. Since this first report we have confirmed this finding in five additional cases. This is one of our most convincing experiments in that the toxin we are using was neutralized or antibodies were produced against it when an individual recovered from the disease.

6. Table 8 in the same report showed negative reactions to the cutaneous test with meningococcus soluble toxin in six convalescent cases.

7. Cutaneous tests by Ferry, ourselves and others have shown a trend from positive to negative following active immunization.

8. Finally, the most suggestive evidence that we have that the meningococcus soluble toxin may confer protection to human beings is that in twenty different places where cases occurred exposing groups that would ordinarily be considered susceptible the soluble toxin was given with only one additional case occurring. In other words, it would be rather difficult to conceive how one could select twenty outbreaks for immunization and give the toxin at the time when no additional cases were going to occur.

Dr. Ferry of Parke, Davis & Co. wrote recently and stated that I had said "to establish the best possible immunity against epidemic meningitis a greater antibody producing substance was needed." Dr. Ferry comments further: "I notice that of all individuals injected you had but one case following the treatment. That looks like a pretty good record. How would one go about to improve it?" I understated the case purposely to stimulate others to study the soluble toxin further.

Drs. Vener and Parrish indicated in their analysis that since a meningococcus vaccine had been proved to be non-effective the same would apply to the soluble toxin. This suggests that they apparently missed the reason for our using the soluble toxin. To compare the soluble toxin with the vaccine would be like comparing diphtheria toxoid with a diphtheria vaccine. The bacteria in our first paper were shown to have very little antigenic value. It was due to the excellent results obtained by Dr. Ferry with his meningococcus antitoxin that we were led to give the soluble toxin a trial.

The occurrence of meningitis during the World War varied from 0.3 to 6.6 per thousand in thirty-nine concentration camps and ranked sixth as the cause of death.

Dr. P. M. Stimson of Cornell University, in his manual entitled "Common Contagious Diseases," 1936, page 290, states that an attack rate in a general population of 1 per thousand is rare. Our rates varied from 21 to 50 per thousand in unimmunized enrollees and only one case developed in 7,511 immunized enrollees reported. In approximately 3,000 enrollees immunized since then no cases have occurred. If we can continue to keep our attack rate at this level in concentrated and exposed groups we shall be very fortunate indeed. However, no conclusions can be drawn from our attack rate, owing to the fact that soluble toxin was given as early as possible in each outbreak.

As the result of the ease of making this soluble toxin and the absence of reactions in the individuals receiving it and with the evidence accumulated that immunity can be produced by the toxin in living tissue, we feel as many others that every effort should be extended to encourage the use of the soluble toxin and the development of a more potent immunizing product.

In summary I give the following vital points as to why the immunity of the individual should be raised in controlling meningitis:

1. Sanitary measures have been tried but in themselves are insufficient to prevent further occurrence of cases.
 2. Control of carriers by culturing at the present time is considered ineffective.
 3. Epidemic meningitis still remains a definite preventive medicine problem which may cause the physician in charge not only considerable administrative embarrassment but actual loss of life beyond his control.
 4. The soluble toxin is a new form of antigen which practically, both experimentally and clinically, has yielded excellent results, that is, no further cases occurred in individuals exposed after immunization in closed populations during an outbreak.
- At present I know of no means of raising individual immunity other than giving the products of metabolism produced by the meningococcus in culture. Any other method offered to increase the immunity will certainly be acceptable.
- The comment of Drs. Vener and Parrish is the only dissenting opinion received up to the present time. However, I have received many letters from public health officials, pediatricians from medical schools including Harvard and Stanford, from this country and one was received from the chief health officer of Czechoslovakia, all commending the work and expressing a desire to give the toxin a clinical trial.

Although demands of the service have required that I take my tour on foreign duty at the present time, I am in a posi-

tion to carry on further investigative work. The work begun at Leavenworth is being continued there by my former associates.

I should like to initiate a campaign to use the soluble toxin wherever outbreaks occur both in the civilian population and in the army. The use of the toxin in only half of the exposed groups over a period of several years in a large number of outbreaks should make decisive data available. This appears to be the next step in making use of an available control measure for meningococcal meningitis. Any suggestions as to a feasible method of carrying this out will be appreciated.

Drs. Vener and Parrish, it is believed, have not only misinterpreted our results but have arrived at their conclusions somewhat prematurely. Although all the evidence for immunization that we have at the present time is favorable, it is conceivable that the sequence of future events might alter this view. For that reason our only hope for progress in this work is to continue the clinical trial.

DWIGHT M. KUHN, M.D., Ancon, Canal Zone.

Captain, M. C., United States Army.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

"NORMAL" ALCOHOL IN TISSUES—ABSORPTION OF ALCOHOL THROUGH SKIN

To the Editor:—1. I should like to know whether there is alcohol present normally in the blood and spinal fluid and if so to what level (milligrams per hundred cubic centimeters of fluid). 2. I should also like to know what level (milligrams per hundred cubic centimeters of blood and spinal fluid) is considered the point of occurrence of intoxication. 3. Has there ever been a case of alcoholic intoxication reported by absorption through the normal skin from local application? 4. What substances are most readily and rapidly absorbed through the normal skin by local application (without massage or other means of stimulating or increasing absorption)? How does alcohol compare with them in this respect? 5. Is individual sensitivity or tolerance a factor in the absorption of these substances, especially alcohol, through the skin normally, and if so to what extent?

B. H. BAYER, M.D., Houston, Texas.

ANSWER.—1. The amount of "normal alcohol" in body fluids is extremely small. Earlier investigators reported as much as 0.003 per cent, or 3 mg. per hundred cubic centimeters, but recent research indicates that most of the volatile reducing substance which was reported as alcohol is actually nonalcoholic in nature. Harger and Goss (*Am. J. Physiol.* 112:374 [June] 1935) report the normal amount to be from 0 to 0.027 mg. per hundred grams. Spinal fluid analyses are not reported, but it is known that one or more hours after ingestion of alcohol the spinal fluid alcohol usually exceeds that of the blood by about 20 per cent.

2. When the blood alcohol reaches 0.02 per cent (20 mg. per hundred cubic centimeters) carefully controlled psychologic examinations usually demonstrate definite mental impairment. At a blood alcohol level of 0.07 per cent (70 mg. per hundred grams) or spinal fluid or urine level of about 10 per cent symptoms of intoxication are ordinarily observed, and this figure has been accepted by the Committee on Tests of Intoxication of the National Safety Council as prima facie evidence of intoxication. All carefully controlled observations of individuals whose blood alcohol has reached 0.15 per cent (150 mg. per hundred cubic centimeters) or whose urine or spinal fluid has reached 0.2 per cent have been deprived of some of that clearness of intellect and control of themselves which they would otherwise possess and they are therefore definitely under the influence of alcohol. The National Safety Council committee has therefore set these figures as incontrovertible evidence of intoxication.

3. Although fatal alcohol poisoning has been reported following the application of alcohol dressings on the skin of a burned individual (Frankel and Nicolai: *Deutsche Ztschr. f. gerichtl. Med.* 11:134, 1928) no recorded case has been found of intoxication due to absorption of alcohol through the normal skin. However, the following experiment was performed in order

to answer the question regarding the possibility of absorption of alcohol through the normal skin: Two small children were given alcohol rubs lasting eight minutes. There was no possibility of inhalation of alcohol, since the subjects were properly attached to a basal metabolism machine. That definite absorption of alcohol occurred was demonstrated by a maximum alcohol concentration in the urine of 0.025 per cent.

4. David I. Macht (The Absorption of Drugs and Poisons Through the Skin and Mucous Membranes, *THE JOURNAL*, Feb. 5, 1938, p. 409) finds that the essential or volatile oils are readily absorbed through the intact skin and can be used as vehicles for the absorption of alkaloids and other drugs. Ethyl alcohol apparently compares unfavorably in its penetrability of the skin with the numerous substances tested by Macht.

5. No information is at hand regarding individual sensitivity or tolerance in the absorption of alcohol through the skin, but it is likely that the same factors apply to alcohol absorbed through the skin as for ingested alcohol.

POSSIBLE TOXIC EFFECT FROM METAL CLEANER

To the Editor:—Could you give me some idea of the composition and possible toxic symptoms arising from the use of a metal cleaner and paint remover put out by the Nieco Products Company of Detroit, under the serial number 22.

M.D., Indiana.

ANSWER.—The manager of the company mentioned was consulted in connection with this query. He states that item 22 of his company's products is strictly a metal cleaner and not a paint remover. Its ingredients are ethyl amyl ketone approximately 25 per cent, a sulfated lauryl alcohol approximately 25 per cent, and an undisclosed organic acid 50 per cent. The nature of this acid is a trade secret, but it may be noted that oleic acid or a similar fatty acid is frequently used in this type of cleanser. Of these substances, ethyl amyl ketone, because of its high boiling point (168 C.), is little likely to produce vapors. Although this substance may be highly toxic, it would be necessary to heat it in order to drive off high concentrations of vapors. Salts of lauryl sulfate are components of detergents such as Drene which do not cause precipitates with "hard" water. Of the major constituent, an organic acid, nothing beyond conjecture can be stated. From what is now known of this mixture, this cleanser as used in the ordinary course of metal polishing is likely to be the source of nothing more than a dermatitis, although the unknown acid prevents more certain statements. However, the prospects of its being a definite skin irritant are obvious. Potentially, the ethyl amyl ketone is the most injurious constituent.

CHRONIC CARBON MONOXIDE POISONING OR NEUROSIS

To the Editor:—A woman, aged 39, discovered a year ago that she and her room mate were exposed to carbon monoxide gas from an old furnace. They had occupied the same apartment for a number of years and felt sick periodically every winter. When finally carbon monoxide poisoning was suspected a quantitative blood test showed 20 per cent carbon monoxide in the blood. They moved immediately; in fact, they built a small house at the edge of town and installed electric and wood stoves. They avoid gas-heated houses, automobile rides and traffic. In spite of these exaggerated precautions they are almost continually ill, suffering from headache, anorexia, vomiting, amblyopia and general malaise. Nov. 4, 1937, the most careful physical examination, including blood and urine analyses and a Wassermann test failed to give any explanation. A quantitative blood analysis, however, showed 3 per cent carbon monoxide, and if it were not for this one would be tempted to label them as neurotic patients because of their phobia of smells and general complaints. I am at a loss to explain the consistent presence of carbon monoxide in the blood in an environment which is essentially free from carbon monoxide, and I know still less how to relieve them of their complaints, which are so disturbing that they may have to give up their positions. Oxygen inhalations give temporary relief. I am giving them vitamin C with the idea of increasing cell resistance. Any suggestions as to the treatment of these cases of real or apparent persistent carbon monoxide poisoning would be appreciated.

M.D., Oklahoma.

ANSWER.—It is difficult to determine from the facts given whether or not these women are suffering from chronic carbon monoxide poisoning. W. J. McConnell (Text-Book of Medicine, Cecil, Philadelphia, Fourth Edition, 1937) states that: "Chronic poisoning by CO is believed by many authors to be a clinical entity. It is certainly true that in many individuals long exposed to small amounts of CO there are such evidences of disease as persistent headache, malaise, and an ill-defined debility."

Henderson (J. A. M. A. 94:179, Jan. 18, 1930) stated: "Less acute but more prolonged are the effects of repeated exposure to small amounts of carbon monoxide, such as a mechanic in an automobile repair shop breathes day after day, or a workman at a blast furnace or gas plant, or a cook working in a small badly ventilated kitchen with a defective gas

stove. The results of such conditions are impairment of general health, nervousness, ill temper, and a condition similar to 'over-training' in an athlete or to the 'air staleness' of an aviator who has made many high ascents.

"For such low grade chronic intoxication the only proper treatment, and all that is necessary, is the improvement of the conditions, especially the ventilation, under which the persons concerned live and work."

A percentage saturation of the blood to between 10 and 20 results in tightness across the forehead, possibly slight headache and dilatation of cutaneous blood vessels, while percentage of blood saturation between 20 and 30 results in headache and throbbing in the temples according to Sayers and Davenport (Public Health Bulletin No. 195, U. S. Public Health Service, 1930, p. 53).

According to these same authors percentage saturations below 20 per cent do not result in symptoms. Whether or not continued exposure which had resulted in 20 per cent saturation would have as prolonged an effect as indicated in the inquiry cannot be definitely stated. It would seem more likely, however, that if this symptomatology is resulting from carbon monoxide there is additional exposure to the gas in some concentration.

ASTHMATIC ATTACKS FROM COAL GAS

To the Editor:—One of my asthmatic patients has paroxysms every time he takes care of a coal water heater in the cellar. Is there a test which I can use in my office to detect a hypersensitivity to coal gas or dust? I should appreciate information and technic concerning such a test. Is there any specific therapy for this type of asthma?

M.D., New York.

ANSWER.—Asthmatic attacks are commonly brought on by the fumes of coal gas. The general opinion is that this is a nonspecific effect. This may mean that the patient is specifically sensitive to something which has not been discovered; his actual attacks are precipitated by specific factors such as dust, infection and chemical fumes, among which coal gas plays an important part.

There is also the possibility that one may be specifically sensitive to coal gas or dust. This has not been sufficiently worked out. However, hypersensitivity to wood smoke has been described. For testing purposes one can use, for the scratch test method, preparations of wood smoke which are obtainable on the market.

It is further possible, in view of the history of attacks coming on while the patient is in the cellar, that something aside from coal gas or dust may be the causative factor. This is particularly true of fungi. Many allergic persons who have their attacks occur while in the cellar or basement owe the origin of these attacks to the inhalation of the fungus spores so commonly found in many basements.

STERILIZATION OF COCAINE HYDROCHLORIDE SOLUTIONS

To the Editor:—On two different occasions *THE JOURNAL* has published queries and minor notes on the sterilization of cocaine solutions. In one it says not to allow the temperature to go above 96 C., in the other that the solution should be placed in the sterilizer under 15 pounds pressure for fifteen minutes. I am informed that when under 15 pounds pressure for fifteen minutes the temperature is 234 F. This would cause a decomposition of the cocaine. I hope that you will bear with me as I desire answered in detail the two following questions so that I will feel that I am following the proper procedure in my institution: 1. I use 4 per cent cocaine solution for local anesthesia in cataract operation; what is the best way to prepare this solution so that I may feel assured that it is absolutely sterile? 2. I use 2 per cent cocaine in 1:8,000 epinephrine solution for local use in the nose. Please give in detail method of preparing a sterile solution of it.

M.D., Ohio.

ANSWER.—The A. M. A. Chemical Laboratory has written to a number of persons concerning the sterilization of cocaine and hydrochloride solutions for use in the eye, nose or throat, and finds that this is not an easy question to answer. Apparently, boiling will give satisfactory results provided the solutions are not boiled for too long a time and of course the water must not be alkaline. The use of Seitz filters for sterilization of cocaine hydrochloride solutions has been recommended. This should be done only if the filter has been washed until the reaction of the washings is magnesia free. Washing with acid must be done before the filter is placed in the filtration apparatus and it should be thoroughly washed afterward with water.

A 1 per cent solution of cocaine hydrochloride in water gave a pH value of 5.17 when freshly prepared and two months later gave a pH value of 4.2 and showed negligible hydrolysis; a solution of the same strength but in 0.001 normal hydro-

chloric acid had a pH value of 2.9 and was the same at the end of the period. A buffered solution hydrolyzed to the extent of 31 per cent in two months.

The pharmacist of the Presbyterian Hospital of Chicago advises that in the case of eye solutions he uses freshly redistilled water which is then boiled one minute. A discussion on the sterilization of easily decomposed chemicals appears in Martindale and Westcott's *Extra Pharmacopoeia*, edition 16, volume I, page 288 and volume 11, page 140.

Dean Edward Spease of the School of Pharmacy of Western Reserve University has furnished the list of references which follow. He states that 5 cc. ampules of 4 per cent cocaine hydrochloride are prepared in his institution by placing from 3.5 to 4 cc. in them and sterilizing for from fifteen to twenty minutes at 100 C. in a hot water bath, Kimball glass being used. Preparations of 4 and 10 per cent solutions were made by placing such solutions in bottles, glass stoppered, for use in laryngeal cocaineization, which are not sterilized but with which there has been no difficulty. It is rare to have a solution older than one week or ten days.

Regnier, J., and David, R.: Effect of Heating on Anesthetic Power of Buffered Solutions of Cocaine Hydrochloride, *Bull. Sc. Pharm.* 40: 650, 1933, through *Quart. J. Pharm. & Pharmacol.* 7: 139, 1934.

One per cent solutions of cocaine hydrochloride when sterilized in an autoclave at 120 C. for fifteen minutes with phosphate buffers lose their anesthetic powers entirely if neutral and lose the greater part of their anesthetic powers if acid. If buffered weakly with calcium carbonate or magnesium carbonate near neutrality, activity is wholly retained with magnesium carbonate and 70 per cent retained with calcium carbonate. On sterilization, these buffered solutions have a pH of about 3.8.

Regnier, J., and David, R.: Effect of Hydrogen Ion Concentration and Buffer Action on Physiologic Action of Cocaine Hydrochloride, *Bull. Sc. Pharm.* 41: 321, 1934.

Solutions of cocaine hydrochloride buffered with sodium acid phosphate and disodium phosphate show before sterilization an increase of physiologic activity compared with aqueous solutions. Activity increases with alkalinity. When heated at 100 C. for one hour, the solution becomes acid and finally reaches a pH of 4. Heating results in almost complete loss of activity.

A 1 per cent solution of cocaine hydrochloride of pH 4.4 and buffered with acetic acid and sodium acetate shows, before heating, activity equivalent to a 1.5 per cent solution in water, and, after heating, activity is doubled. After storage, activity is equivalent to a 2.4 per cent solution.

Dietzel: Stability of Alkaloids, *Pharm. Zentralbl.* 75: 469 (No. 30), 1934, through *Squibb Abstracts* 7, 1934.

The pH for the maximum stability of cocaine solutions is 3.5.

Regnier, J., and David, R.: Effect of Sterilization on the Stability of Solutions of Cocaine Hydrochloride, *Bull. Sc. Pharm.* 41: 468, 547, 595, 1934, through *Quart. J. Pharm. & Pharmacol.* 8: 571, 1935.

Strongly buffered neutral or alkaline solutions rapidly lose anesthetic power on heating at 110 C. Solutions of pH about 4 offer most resistance to loss of anesthetic power.

Schou, S. A., and Heim, E.: Sterilization of Cocaine Solution, *Pharm. Act. Helv.* 10: 31, 1935, through *Quart. J. Pharm. & Pharmacol.* 8: 287, 1935.

Buffer of pH over 4 accelerates hydrolysis. Solutions of the hydrochloride may be sterilized for thirty minutes at 100 C. If 1 cc. of tenth normal hydrochloric acid per hundred cubic centimeters of solution is added, it may be sterilized for thirty minutes at 120 C.

Tiffeneau: Stabilization of Cocaine Hydrochloride Solutions, *Un. pharm. Paris* 75: 195, 1934, through *Quart. J. Pharm. & Pharmacol.* 7: 736, 1934.

Solution of cocaine hydrochloride, pH 4, with monosodium phosphate buffer, resists heating badly.

Solution of pH 4.4 with acetic acid and sodium acetate buffer resists heat, and the anesthetic power is increased.

URTICARIA PIGMENTOSA

To the Editor:—A girl baby, aged 3 months, had urticaria pigmentosa, and the condition has remained stationary up to the age of 2 years. Please suggest treatment and prognosis and possible etiology.

J. GILBERT EBLEN, M.D., Knoxville, Tenn.

ANSWER.—The Suttons in their book published in 1935 define urticaria pigmentosa as a chronic inflammatory disease of the skin characterized by lesions which resemble wheals in many respects but the majority of which persist and ultimately become pigmented. The condition is comparatively rare in the United States but is more common in Great Britain. Several hundred cases have been recorded from various parts of the world. It usually begins in early infancy with wheals, papules and nodules, resembling ordinary urticaria at first. The lesions appear all over the body, usually persist, and in a week or two become pigmented. They may coalesce. The lesions are slightly elevated, with firm and well defined bases and chamois color or brown. Vesiculation occurs occasionally. New lesions occur from time to time; older lesions subside and sometimes leave atrophic spots or even scars. Itching is usually severe, and itching and pigmentation may persist after the lesions disappear. The duration is indefinite, with periods of remission. One type is microscopically free from characteristic mast cells.

Little is known regarding the etiology. It usually begins in infancy, although it may start after the age of 20 or even 30. Stelwagon has expressed his belief that urticaria pigmentosa is related to urticaria, the subsequent peculiarities

being a result of secondary changes. Parkes Weber is of the opinion that urticaria pigmentosa is related to telangiectasia. Finnerud found 53.3 per cent of the patients male and 46.7 per cent female; 46.1 per cent began within the first year, 67.1 per cent before the thirteenth year, and 32.9 per cent among adults; 61.7 per cent were macular, 7.8 per cent nodular and 30.5 per cent maculonodular; in eight cases vesicles and bullae were present.

The lesions resemble ordinary urticaria but show enormous infiltration of mast cells instead of the usual collection of leukocytes. Hannay and Mount state that there is no reason to differentiate the condition from ordinary urticaria; they believe it is urticaria plus pigmentation.

It is differentiated from urticaria by the early onset, persistence and pigmentation; from xanthoma by the evanescent character of some of the lesions, intense itching and usual youth of the patient. It usually tends to disappear as puberty is reached. There are many remedies but none are very effective. Pilocarpine and atropine are probably the most useful. Antipruritics are given for relief of the itching. Michael found that three of four cases improved under x-ray treatment.

In the last few years many more case reports have been published, among them the case of Sézary, Caroli and Horowitz, in which no pigmentation was present yet mast cells infiltrated the cutis. Weber and Rast quote several cases in adults and describe one new case in an adult. The adult cases seem to persist for many years and no very efficacious treatment has been found.

LIPOMA AND LIPURIA

To the Editor:—Is it probable that a superficially growing lipoma would absorb, producing a lipuria?

M.D., California.

ANSWER.—It is unlikely that a superficial lipoma would produce lipuria. It seems all the more unlikely in that lipuria has not been reported in more extensive diseases of generalized subcutaneous fat deposits, such as occur in relapsing febrile nodular nonsuppurative panniculitis.

THUMB SUCKING AND NAIL BITING

To the Editor:—I would appreciate any information regarding the safety and efficacy of thumb sucking devices. There is an appliance called "Stop" made by the Corrective Guild in Los Angeles, about which I should like information. If there is any other appliance for thumb sucking, or finger nail biting that you think well of, please let me know.

SIDNEY TRATTNER, M.D., Richmond, Va.

ANSWER.—Thumb sucking is an infantile habit and in the early months of life seems to be normal and innocent. In many instances the children stop voluntarily before the school age. It is only when the habit is persistent and intensive that dental malocclusion may occur.

None of the many devices for preventing the habit, or anointing with bitter or distasteful drugs, seem to effect a permanent cure. One should assume that the young child does not know that the habit is objectionable. He should be encouraged to play with other children and, if he is found indulging in the habit, his attention should be diverted.

Nail biting usually indicates a higher state of nervous tension and is more difficult to control.

It is doubtful whether any of the mechanical devices accomplish the purpose for which they are intended. Parents and even physicians are sometimes more concerned about the habit than is called for.

FLUORINE POISONING

To the Editor:—Please send me the best treatment for fluorine gas poisoning.

M.D., New Jersey.

ANSWER.—There is so little experience on either acute or chronic fluorine poisoning that statements as to treatment should be made and accepted with caution. Fluorine compounds may exert a local action on the skin or may be ingested and followed by acute or chronic poisoning; some gases, vapors or dusty compounds may be inhaled. Apart from suicidal or accidental intakes of fluorine compounds, acute episodes chiefly are associated with fluorine entry by inhalation. As little as 0.2 mg. of fluorine per kilogram of body weight may lead to injury. Acute episodes following inhalation are dominated by pulmonary edema. The chronic state is characterized by overgrowth of bone, calcification of ligaments and bony fragility. For the acute states associated with fluorine inhalation, the following treatment may be indicated: oxygen inhalation, bronchial sedatives to allay violent coughing, the use of bronchial antispasmodics when bronchial asthma appears, the intravenous administration of calcium gluconate, as recommended

by McNally. In general, symptomatic treatment is indicated. In less acute cases, constipation or obstipation may call for treatment. In some instances severe vomiting may appear and call for symptomatic care. No established treatment exists for the stiffness of the body due to bony and ligamentous changes, but it appears that on the gradual elimination of fluorine considerable reduction takes place in the osseous overgrowth. On occasion as much as sixty times the normal content of fluorine in bony tissues may exist. Additional information may be found in the following:

- Roholm, Kaj: Fluorine Intoxication, with a Review of the Literature and Some Experimental Toxicity, London, H. K. Lewis & Co., 1937.
Roholm, Kaj: The Fog Disaster in the Meuse Valley, 1930: A Fluorine Intoxication, *J. Indust. Hyg. & Toxicol.* 13: 126 (March) 1937.
Machle, Willard; Thammann, Frederick; Kitzmiller, Karl, and Cholak, Jacob: The Effects of Inhalation of Hydrogen Fluoride: I. Response Following Exposure to High Concentrations, *J. Indust. Hyg.* 16: 129 (March) 1934.
Machle, Willard, and Kitzmiller, Karl: The Effects of the Inhalation of Hydrogen Fluoride: II. The Response Following Exposure to Low Concentrations, *J. Indust. Hyg.* 17: 223 (Sept.) 1935.
Machle, Willard, and Scott, E. W.: The Effects of the Inhalation of Hydrogen Fluoride: III. Fluorine Storage Following Exposure to Sublethal Concentrations, *J. Indust. Hyg.* 17: 230 (Sept.) 1935.
Ciria, P.: The Phosphorus Content of Blood and of Bone in Various Types of Experimental Poisoning: Lead, Mercury, Chromium, Phosphorus, Strontium and Fluorine, *Med. d. lavoro* 28: 44 (Feb.) 1937.
Roholm, Kaj: Acute Fluorine Poisoning, *Deutsche Ztschr. f. d. ges. gerichtl. Med.* 27: 174, 1936.
Volter, S. V.; Ablina, T. N., and Kremneva, S. N.: Toxic Effect of Fluorine Compounds in the Phosphate Fertilizer Industry, *Gigiena truda i tek. bezopasnosti* 32, No. 5, 1935.
Bishop, P. A.: Bone Changes in Chronic Fluorine Intoxication, *Am. J. Roentgenol.* 35: 577 (May) 1936.
Roholm, Kaj: Fluorine Poisoning in Cryolite Workers, *Arch. f. Gesehrbepath. u. Gesehrbichy.* 7: 255, 1936.

ALLERGIC BLEPHARITIS

To the Editor:—What treatment is advisable for allergic blepharitis? The patients have swelling and redness of the eyelids with intense itching and burning of the eyes, but the conjunctiva is usually clear. Please outline a palliative treatment for this condition, leaving out allergic testing.

EARL H. BROWN, M.D., Tucson, Ariz.

ANSWER.—Allergic blepharitis is certainly an unusual condition if it ever occurs. The symptoms of itching and burning with recurrent swelling are not enough to form the basis of a diagnosis of an allergic condition. Symptoms such as those described are usually relieved with ice during acute attacks of swelling, while the inflammation of the lids is best treated with zinc oxide powder or a 3 per cent zinc oxide ointment in hydrous wool fat. It is necessary, of course, to remove all possible sources of irritation such as cosmetics, hair tonics, hair dyes and especially lash dyes. It is usually possible, by bacteriologic examination and examination for eosinophils, to come to a fairly definite conclusion as to whether the condition is on an infectious or an allergic basis, which is, of course, of utmost importance for any kind of rational treatment.

ELECTROSTERILIZATION OF ROOT CANALS

To the Editor:—Could you give me any information concerning ionization treatment? I am particularly interested with regard to its use for the treatment for dead teeth.

FRED E. CARPENTER, M.D., Newton, Iowa.

ANSWER.—Ionization, or electrosterilization as it has sometimes been called, was introduced in dentistry in the early years of the present century. It created a great wave of enthusiasm and machines were manufactured by the hundreds by dental supply houses but it almost immediately faded out. It is probable that the reason for such a prompt and complete failure was that most of the members of the dental profession were not sufficiently trained in chemistry, biology and physics to make intelligent use of the apparatus. Bad effects were frequent and rather serious in some cases and the whole process went into disrepute. A few men continued, however, and have used the method successfully for twenty-five years or more.

The method depends on the separation of molecules into their ions; positive ions move in an electric current to the negative pole and negative ions move to the positive pole. By this method antiseptic and germicidal chemicals can be carried into the tissues to reach areas of infection not accessible from the surface. It is clear that such a method requires a good background in chemistry, physics and biology for its successful application. Chemicals that will destroy bacteria have a more or less deleterious effect on tissue cells and it is quite easy to destroy not only the bacteria but the tissue cells, making the situation worse rather than better. The recent method employed in treating such conditions as infections around the apex of tooth roots has tended strongly in the direction of

removing the source of bacterial infection and leaving the tissues to fight out the battle with the bacteria by means of their own defense mechanism. It is, however, probably possible by intelligent use of this method to kill bacteria in the tissues and at the same time stimulate the tissues and their defense mechanisms.

Dr. H. B. Johnston of Atlanta, Ga., has been using the method for a long time. He presented a clinic at the recent midwinter meeting of the Chicago Dental Society and he has a paper on the improved status of the pulpless tooth in the March 1938 issue of the *Journal of the American Dental Association*, volume 25, page 429. This article is chiefly a discussion on focal infection but refers to electrosterilization. A large amount of material has been written on this subject and reference should be made to two textbooks, one by Ernest Sturridge, *Dental Electro-Therapeutics*, Philadelphia, Lea & Febiger, 1914, and one by Herman Prinz, *Dental Materia Medica and Therapeutics*, St. Louis, C. V. Mosby Company, 1917, and to the following list of journal articles:

- Prinz, Hermann: Electrosterilization of Root Canals, *Cosmos* 59: 333, 1917.
Sturridge, Ernest: The Electrotherapeutic Action of Certain Ions, *Cosmos* 59: 793, 1917.
Sturridge, Ernest: Ionization in Root Canal Therapy, *Brit. Dent. J.* 1923, p. 1420.
Rhein, M. L.; Krasnow, F., and Gies, W. J.: A Prolonged Study of the Electrolytic Treatment of Dental Focal Infection, *Cosmos*, 1925, p. 971.
Prinz, Hermann: Electrosterilization of Root Canals, *Cosmos*, 1917, p. 373.
Johnston, H. B.: Destruction of Apical Infection, *J. Dent. Res.* 4: 163, 1922.
Badecker, C. F.: The Ionization of Septic Roots, *Cosmos* 69: 1135, 1927.
Grossman, L. I., and Appleton, I. L. T.: Experimental and Applied Studies in Electrosterilization, *Cosmos* 73: 147, 1931.
Hosper, John: Electromedication in Root Canal Therapy, *Dental Digest* 41: 117, 1935.
Grossman, L. I., and Prinz, Hermann: A Comparative Study of Root Canal Therapy with (1) Camphorated Chlorophenol and with (2) Electrosterilization, *Cosmos* 74: 324, 1932.
Johnston, H. B.: Clinical Results in Periapical Sterilization, *J. Am. Dent. A.*, 1924, p. 1170.

DIAGNOSIS OF PENILE ULCERS

To the Editor:—During the last four months I have been treating for scrofula a Negro aged 45. His general health had apparently been better for several years because of phagedena of the penis. When I first saw him, the prepuce presented a mouse-eaten, jagged appearance with a copious thin reddish gray discharge and had partly sloughed away. Verrucae were also present on the ragged edges of the prepuce. The tissues of the penis were inflamed, red, swollen, and firm to the touch. There were numerous small openings in the shaft of the penis from which a considerable amount of pus could be expressed. Microscopic examination of the specimen slides of the pus revealed two strains of staphylococci. At present the prepuce, glans penis and a small portion of the distal extremity of the shaft of the penis have sloughed away and the ulcerated remaining tissues are bloody when a gauze dressing is removed or when the tissues are lightly touched with a gauze sponge. Previous reports indicate that the patient had a positive blood Wassermann test and an unknown amount of antisyphilitic treatment in 1912 following a venereal infection which was at that time diagnosed as chancroid. The treatment has consisted of cleansing the parts with antiseptic solutions, hot fomentations, applications of iodoform powders, iodoform gauze and chemical cauterization. Neosarsphenamine has been administered intravenously on the theory that the condition might be due to a gumma. A blood Wassermann test and spinal fluid examination were negative at the time the treatment was instituted. So far the condition has resisted all treatment and has shown no tendency to heal. What is your opinion as to etiology, diagnosis, treatment and prognosis? Please give full information concerning the disease of venereal phagedena and also references to standard textbooks on this subject. M.D., Virginia

ANSWER.—Gumma can be ruled out because of the nature of the ulcers and the infiltrate described and because of the failure to heal after antisyphilitic treatment. Tuberculosis colliquativa (scrophuloderma), chancroid, granuloma inguinale, venereal lymphogranuloma and actinomycosis or some similar fungous disease should be considered. There may be multiple infection.

Tuberculosis may sometimes be proved by direct examination of smears from the pus. Fungi may also be found in this way. If this fails, a biopsy should be taken under precautions against introducing any other organisms than those already present and part of it inoculated into guinea pigs, smears from the base of the biopsy examined for tubercle bacilli and Donovan bodies and the rest sectioned for microscopic and bacteriologic study. General examination for tuberculosis, including roentgen studies and tuberculin tests, should be made.

Granuloma inguinale is suggested by the excessive granulations, bleeding on removal of dressings. The Donovan bodies are seen best when stained with Wright stain, as oval, apparently encapsulated bodies, intracellular or extracellular, sometimes bacillus-like, in other places like diplococci. They measure from 1 to 3 microns.

Venereal lymphogranuloma is tested for by the Frei test, injection of 0.1 cc. of Frei antigen intracutaneously on the flexor surface of the forearm. A papule 0.5 cm. in diameter or larger within two days indicates a positive reaction.

Chancroid can sometimes be proved by finding the streptobacillus of Ducrey in smears from beneath the overhanging edge of the ulcer. A skin test with a vaccine produced in Europe, called "dmelcos," is made by intracutaneous injection of 0.1 cc. A papule 0.5 cm. in diameter within two days indicates a positive reaction. Like the Frei test, this may occur in persons who have been infected years before and show no signs of the disease. Cole and Levin (The Intradermal Reaction for Chancroids with Chancroidal Bubo Pus, THE JOURNAL, Dec. 21, 1935, p. 2040), because of the difficulty of obtaining dmelcos vaccine, made a vaccine from the pus of chancroidal buboes. The pus was diluted with four parts of physiologic solution of sodium chloride and heated at 60 C. for two hours the first day and one hour the second day and then cultured for sterility. It is used in the same way as the dmelcos vaccine.

Actinomycosis or other fungus, if not found in the direct smear, either stained or examined fresh in potassium hydroxide solution, may be seen in the microscopic section, or the pus can be inoculated on some sugar medium, preferably Sabouraud's.

The prognosis, no matter which of the diseases mentioned is responsible, is not good for a patient who has had the trouble for several years and is in poor condition.

Treatment must consist first in efforts to improve the patient's general condition and to raise resistance. General exposures to ultraviolet rays may be of assistance, combined with rest in bed and good food. Roentgen rays in divided doses to the affected parts may help in most of the conditions mentioned. In addition to the local treatment for chancroids, some patients have been benefited by intravenous injections of the vaccine used for diagnosis. From 1 to 2.5 cc. has been given every second or third day, causing a febrile reaction. The stomach must be empty when the injection is given.

If lymphopathia venereum or granuloma inguinale is found, intravenous injections of 1 per cent antimony and potassium tartrate solution, beginning with a dose of 3 cc. diluted to 10 cc. with physiologic solution of sodium chloride should be given. The dose may be increased in successive injections by increasing the amount of the antimony and potassium tartrate solution and decreasing the amount of the diluent until undiluted 1 per cent antimony and potassium tartrate solution is used in a 10 cc. dose. These injections are given twice a week. The urine must be watched for albumin or casts, and some nausea and headache must be expected after the injections. Fudain (proprietary name of the Winthrop Chemical Company for sodium antimony III bisulfate disulfonate of sodium) is less toxic and at least equally effective. Benefit has been reported from repeated injection of the Frei vaccine in the treatment of venereal lymphogranuloma and intravenous injections of compound solution of iodine have been beneficial. Surgery is of importance in the treatment of both diseases.

Actinomycosis is treated by large doses of iodides by mouth or intravenously and by roentgen rays locally. Thymol applied in 10 per cent solution in olive oil locally in the sinuses and crystalline thymol from 1 to 1.5 Gm. in capsule by mouth once a day have cleared up several cases (Myers, H. B.: Thymol Therapy in Actinomycosis, THE JOURNAL, May 29, 1937, p. 1875). Surgery may be a valuable aid here also.

A more thorough discussion of these diseases may be found in Cabot's Modern Urology, third edition, Philadelphia, Lea & Febiger, 1936, volume 1, page 217.

EFFECT OF STORING SERUMS ON WASSERMANN REACTION

To the Editor:—Are there two different kinds of blood serums with respect to the speed of reaction to the Wassermann test? Is there a blood serum which works slowly and if allowed to stand will give a negative test but when read early will give a positive reaction?

J. W. HOPKINS, M.D., Glendale, Calif.

ANSWER.—Serums giving definitely positive or definitely negative serologic reactions undergo little or no change on standing one or more days at ice box temperature. Serums giving weak or borderline serologic reactions may undergo such changes as to give either stronger or weaker reactions after standing one or more days in the cold. Prolonged standing (a week or more) even at ice box temperature will generally not affect negative serums but is likely to cause strongly positive serums to give weaker serologic reactions. The reason for these changes in serum reactions is not known.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, July 9, page 193.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination, Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: St. Louis, Nov. 11-12 if the number of candidates warrants it. Applications of Class B candidates should be filed by Sept. 1 and of Class A by Oct. 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: Written examination will be held at various centers of the United States and Canada, Oct. 17. Final date for filing applications is Sept. 1. Chairman, Dr. Walter L. Biering, 406 Sixth Ave., Suite 1210, Des Moines, Iowa.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination for Group B candidates will be held in various states of this country and Canada, Nov. 5. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: New York, Oct. 7, and Washington, D. C., Oct. 8. All applications should be filed immediately and case reports, in duplicate, must be filed not later than sixty days before the date of examination. Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF OTOLARYNGOLOGY: Washington, D. C., Oct. 7-8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Detroit, October 26; Rochester, N. Y., November 13; and Oklahoma City, November 15. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF RADIOLOGY: Atlantic City, N. J., Sept. 15-18. Sec., Dr. Byrl R. Kirklm, 102-110 Second Ave. S.W., Rochester, Minn.

Colorado April Report

Dr. Harvey W. Snyder, secretary, Colorado State Board of Medical Examiners, reports the written examination held at Denver, April 6-8, 1938. The examination covered 8 subjects and included 165 questions. An average of 75 per cent was required to pass. Ten candidates were examined, nine of whom passed and one failed. Six physicians were licensed by endorsement on April 5. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Creighton University School of Medicine.....	(1937)	83	
University of Oklahoma School of Medicine.....	(1937)	84, 85	
Julius-Maximilians-Universität Medizinische Fakultät, Würzburg.....	(1935)	86	
Philippus-Universität Medizinische Fakultät, Marburg.....	(1934)	85.5	
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultása, Budapest.....	(1937)	84.5	
Osteopaths *.....		80.5, 81, 84	
FAILED			Per Cent
Osteopaths *.....			74.4

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Rush Medical College.....	(1927), (1936)		Illinois
University of Illinois College of Medicine.....	(1936)		Illinois
University of Nebraska College of Medicine.....	(1932)		Nebraska, (1934) Wyoming
University of Oregon Medical School.....	(1934)		California
* Examined in medicine and surgery.			

National Board of Medical Examiners

The National Board of Medical Examiners reports that its certificate was awarded to sixty-six applicants who were successful in the examinations in part III held at Chicago and New York in January 1938. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
College of Medical Evangelists.....	(1937)		1
Yale University School of Medicine.....	(1935), (1936)		2
Georgetown University School of Medicine.....	(1935), (1936, 3)		4
Loyola University School of Medicine.....	(1937)		1
Northwestern University Medical School.....	(1932), (1937, 3)		4
Rush Medical College.....	(1937, 2)		2
School of Med. of the Division of Biological Sciences.....	(1937)		1
University of Illinois College of Medicine.....	(1937)		1
University of Louisville School of Medicine.....	(1936, 3)		3
Harvard University Medical School.....	(1934), (1935), (1936)		3
Tufts College Medical School.....	(1936, 2)		2
University of Michigan Medical School.....	(1934), (1935)		2
Wayne University College of Medicine.....	(1935)		1
St. Louis University School of Medicine.....	(1935)		1
Creighton University School of Medicine.....	(1936)		1

Columbia Univ. College of Physicians and Surgeons.....	(1933)	1
Cornell University Medical College.....	(1934), (1936, 4)	5
Long Island College of Medicine.....	(1935), (1936)	2
New York Medical College and Flower Hospital.....	(1936, 12)	12
New York University College of Medicine.....	(1935), (1936, 3)	4
University of Buffalo School of Medicine.....	(1936)	1
University of Cincinnati College of Medicine.....	(1936)	1
Woman's Medical College of Pennsylvania.....	(1930), (1935)	2
Baylor University College of Medicine.....	(1936)	1
University of Vermont College of Medicine.....	(1936)	1
Medical College of Virginia.....	(1930)	1
Marquette University School of Medicine.....	(1931)	1
Medizinische Fakultät der Universität Wien.....	(1936)	1
American University of Beirut School of Medicine.....	(1934)	1
Universität Zürich Medizinische Fakultät.....	(1936)	1
Université de Genève Faculté de Médecine.....	(1936)	1

Book Notices

A Symposium on Cancer. Addresses Given at an Institute on Cancer Conducted by the Medical School of the University of Wisconsin. Cloth. Price, \$3. Pp. 202, with illustrations. Madison: University of Wisconsin Press, 1938.

In this short book are collected a series of seventeen papers outlining the paths which investigations on cancer have been taking. The busy practitioner, as well as others who have heard rumors of the recent rapid advances of studies in the nature and etiology of cancer and who wish to know about them, can read this volume with profit. Many aspects of the constitutional, genetic, endocrine and virus nature of cancer genesis are well presented, as well as the nature of the cancer cell itself, together with other problems in cancer. Kreyberg begins the symposium by speaking on the genetic and constitutional aspects of spontaneous and induced tumors. Little, in a chapter on the influence of intrinsic factors in the development of tumors in mice, shows the importance and complexity of such factors. MacKlin states that the familial incidence of cancer points to an inherited factor, which is difficult to detect because of the complexities of genetic transmission and because different types of cancer may have different modes of transmission. Allen describes the effects of ovarian hormones in producing atypical growths and malignant tumors in the genital tissues as well as others. Andervont reviews the subject of the chemical carcinogens, the relation of chemical structure to cancerogenic activity, the fundamental method of action, and the types of tumors produced. MacKlin discusses the factor of chronic irritation in the genesis of cancer and points out genuine errors in commonly held ideas. Ewing, in discussing cancer as a public health problem, summarizes the progress that has been made and points out the necessity for an aware public and a well trained medical organization. Fialla discusses the influence of wavelength on the histologic action of radiation. Coutard, in a chapter on the tissue reaction to irradiation, expounds his view on periodicity and radiosensitivity. Lewis contributes an absorbing chapter on the evidence obtained from tissue cultures of cancer cells, showing that they are new races of permanently altered cells. Reimann discusses the biology of the cancer cell. Murphy evaluates the evidence for a virus etiology of malignancy and points out that this is untenable from the evidence now available. Ewing discusses the biopsy, including methods, and indications for its use in many locations. He emphasizes aspiration biopsy. Andervont reviews the effects of bacterial products on the growth of malignant tumors. Novak considers the status of the early recognition, clinically and pathologically, and the treatment of cervical cancer, evaluating the microscopic changes that may lead to cancer. Coutard discusses the radiologic treatment of breast cancer. Kreyberg, in the concluding chapter, gives some results showing the influence of extrinsic factors on the development of induced tumors in genetically homogeneous strains of mice.

Opium Addicts and Addictions. By John A. Hawkins, M.D. Cloth. Price, \$2.50. Pp. 156. Boston: Bruce Humphries, Inc., 1937.

This book, without index or bibliography, is written in semi-popular style. It may be considered as a print of the individual experiences of the author with drug addicts and addiction. His last chapter is a dramatic appeal to practitioners generally that there are dangers in the uses of opium or its derivatives in the legitimate practice of medicine. He discusses in general the indispensable uses of opium, the ill advised prescribing, and also the prescribing by physicians in direct contravention of the law

in an effort to satisfy the craving of addicts. He deplors the latter situation and advocates complete isolation of all addicts. He thinks that a state jurisdiction is not capable of accomplishing this and advocates that the federal government assume such a responsibility. The latter suggestion may be open to some question in view of the fact that the police power exercised over individuals aside from those who commit offenses against the law is exceedingly limited.

His own experience in connection with the treatment of a protracted, painful illness, during which time he became tolerant and dependent on morphine, leads him to warn other practitioners against the careless and unnecessary use of powerful drugs capable of causing addiction and to assure them that the condition of addiction, though well established and of long standing, is curable if proper methods are employed and that permanence may be reasonably hoped for in many cases. The author does not share the traditional opinion that, "once an addict, always an addict." In his own case, however, he never encountered that emotional insecurity which is so common among drug addicts, an attitude of mind which is aided and abetted in part by the traditional outlook toward them and in part also by the innate tendency of the personality involved, since many addicts have shown long before they embraced the use of drugs an emotional insecurity toward situations of life. The author during his addiction never felt deserted, hopeless or ashamed. Such a mental attitude is in part responsible for his rehabilitation.

The fore part of the book contains a brief comment on the vernacular of drug addicts. In the foreword he indicates a wide experience in the treatment and management of these unfortunate persons while they have been incarcerated in penal institutions, and also from the standpoint of ambulatory care. He condemns the practice of ambulatory treatment for drug addiction, as he thinks it impractical. He says in his foreword, "If what is contained in these pages shall have the effect of making some fellow-practitioner a little more careful in the administration of habit-forming drugs to patients who may become addicted to them, or if it shall cause some of them to be more tolerant with those already enslaved to drugs, then I shall know that my suffering has not been in vain."

The first chapter deals with an elementary dissertation on the pharmacology of opium and its effects, the second with the subject of tolerance, and the third with those who have become addicted, illustrated by case histories, the type of individual who becomes addicted, and the degradation which follows. By way of illustration the cases cited are largely of persons showing warped and distorted personalities even before they embraced the use of drugs, but by contrast he presents a case in which the emotional background and character are of such a nature that rehabilitation and restoration to a normal existence take place. He describes in some detail the symptoms seen when opium is abruptly and suddenly withdrawn and the treatment of that aspect of addiction. He discusses in a general way the need for community placement and supervision and the need for occupation in the scheme of rehabilitation. He does not touch on the psychiatric aspects of the problem or on the necessity for undertaking reintegration of the personality concerned.

L'exploration radiologique post-opératoire de la voie biliaire principale. Par B. Desplas, P. Moulouguet et P. Malgras. Paper. Price, 40 francs. Pp. 120, with 40 illustrations. Paris: Masson & Co, 1938.

This is undoubtedly the most complete exposition of the postoperative radiologic examination of the biliary ducts, the arborization of the biliary tracts and even the duct of Wirsung. These Frenchmen have used lipiodol for opaque injections while some American experimenters have chosen hippuran because the heavy oil seemed to mask the shadows of small stones remaining in the common duct. The first intimation of the possibility of studying the contrary postoperative complications of gall-bladder surgery originated with the accidental filling of the biliary tracts during a barium sulfate meal study by Ball and Jagoda of Fort Worth, Texas. This was followed promptly by American and French reports in 1922. Since 1934 there have been many reports of experimental and clinical studies which are completely catalogued in this monograph. The illustrations are accompanied by diagrams that facilitate understanding. The wealth of clinical material on retained calculi

obstructions from retained clots or cicatricial conditions, chronic pancreatitis and cancer of the pancreas, cysts of the pancreas and biliary fistulas makes the small monograph quite valuable. American sources of such studies are relatively rare. Probably the most complete are those of Hicken, Best and Hunt of Omaha early in 1936. As this roentgen procedure is not difficult, we may look forward to its adoption into the routine of those examinations which may be useful in the postoperative study of gallbladder complications.

Pneumonia and Serum Therapy. By Frederick T. Lord, M.D., Member of the Board of Consultation, Massachusetts General Hospital, and Rodrick Heffron, M.D. Revised edition of Lobar Pneumonia and Serum Therapy. Cloth. Price, \$1. Pp. 148, with 10 illustrations. New York: Commonwealth Fund; London: Oxford University Press, 1938.

This little book contains an admirable description of the applications of specific serum to the therapy of pneumococcal pneumonia. In it are discussed the factors influencing recovery, clinical diagnosis, types of pneumococcal infection and use of serum, the precautions and complications of serum administration, the dosage, and an excellent summary of the effects of serum treatment on the death rate. While it does not aim to discuss all phases of the diagnosis and treatment, it furnishes a reliable analysis of the present status of serum therapy. The important points of technique are well considered, and the book should be an invaluable aid to those at any time treating pneumococcal pneumonia.

Trichinosis: Report of an Outbreak of 25 Cases. By Hyman I. Vener, M.D., C.P.H., Assistant Epidemiologist, and George M. Stevens, M.D., Epidemiologist. Los Angeles City Health Department, Hon. Frank L. Shaw, Mayor. George Parrish, M.D., Health Officer. Los Angeles City Board of Health Commissioners Bulletin No. 33. Paper. Pp. 17. Los Angeles, 1938.

This brochure is a report of an outbreak of twenty-five cases of trichinosis occurring in eight households in Los Angeles. The infection was apparently transmitted by eating lack-schinken, a smoked raw ham which resembles Canadian bacon, the suspected product having been peddled from house to house. All cases were confirmed by definite eosinophilia and in many instances by positive cutaneous tests. The symptoms were mild, which fact apparently served to produce some initial confusion in diagnosis. The report concludes with the authors' belief, that the cutaneous test serves as a valuable adjunct in diagnosis.

Viruskrankheiten des Menschen: Ihre Erreger und ihre Bekämpfung. Von Dr. med. Richard Dieling, a. o. Professor für Hygiene und Immunitätswissenschaft an der Philipps-Universität, Marburg/L. Paper. Price, 4.80 marks. Pp. 114. Leipzig: Johann Ambrosius Barth, 1938.

This brochure on virus diseases concerns itself essentially with the virus diseases in man. There is a summary of virus diseases in animals and a correlation is made with the disease in animal as it may affect man; for example, foot and mouth disease in animals and its correlation in man. Another correlation is made between swine and human influenza. As a textbook this work cannot be used by students in bacteriology or those interested in virus diseases except as an outline of the subject of virus diseases and a short discussion on immunity. The author has attempted to give a review of the subject of virus diseases and has included a brief bibliography at the end of each chapter. The brief review of the literature is brought down to the year 1937.

Les explorations fonctionnelles. Par Noël Flessinger, professeur de pathologie expérimentale et comparée à la Faculté de médecine de Paris. Paper. Price, 70 francs. Pp. 430, with 65 illustrations. Paris: Masson & Cie, 1937.

This volume is not primarily a laboratory manual. Rather it is a combination of physiology and clinical laboratory diagnosis. Methods of estimating the functional capacities of the various organs are presented, with a correlation between the function in health and in disease. The limitations and applicabilities of each method are well discussed. The scope of the book is wide, embracing consideration of the central nervous system, lungs, heart, gastrointestinal tract, liver, spleen, pancreas, kidneys, endocrine glands, blood and reticulo-endothelial system. Because of the wide field covered, the separate discussions are often brief. This brevity is particularly noticeable in the discussion of the blood, the electrocardiogram, the cerebrospinal fluid and the endocrine glands. The section on the liver is the best feature of the book, as it reviews well

most of the complex features of liver metabolism: the formation of bile and bile salts, the significance of the direct and indirect Van den Bergh test, the formation of urea, glycogen storage, and metabolism, cholesterol formation and the relation of the liver to the serum proteins. The problem of renal function is also well covered, particularly with reference to chloride metabolism and renal and prerenal azotemia. In each section the functions which can be investigated, and those which cannot, are listed. The physiology of the organ is then discussed, followed by the laboratory methods that are available. Lastly, the results found in various pathologic states are tabulated, with suggestions as to what tests are of most value in the differential diagnosis of any given condition, as jaundice. While there is little that is new to the American reader in this volume, it is comprehensive in its survey of diagnostic methods. It should commend itself for use as a practical working guide in deciding which laboratory tests to use and the significance of the results obtained.

The Baby's First Two Years. By Richard M. Smith, A.B., M.D., Sc.D., Assistant Professor of Pediatrics and Child Hygiene, Harvard Medical School and School of Public Health, Boston. Fourth edition. Cloth. Price, \$1.75. Pp. 121, with 20 illustrations. Boston: Houghton Mifflin Company, 1937.

This book, dealing with the growth and development of the baby from birth to the age of 2 years, has found a wide usage. The author has detailed equipment necessary for the comfort of the baby. There are descriptions of ideal surroundings for the home and nursery. The feeding, both breast and artificial, habits, training and care during sickness are described. Suggestions are given to the mother for the care of herself, and traveling with the baby is made easy through a description of the facilities necessary during travel. Appended are recipes for the preparation of infant foods. The illustrations which have been added in this edition are clear and excellent in detail.

Grundriss einer Meteorobiologie des Menschen: Wetter- und Jahreszeiteninflüsse. Von Professor Dr. B. de Rudder, Direktor der Univ.-Kinderklinik Frankfurt a. M. Second edition. Paper. Price, 12.60 marks. Pp. 234, with 59 illustrations. Berlin: Julius Springer, 1938.

In this volume de Rudder presents a good review of past clinical studies on weather and seasonal relationships in the incidence of disease, largely restricted, however, to publications in the German language. This review and extensive bibliography of German articles will prove useful to workers in other lands to whom many of the original publications may not be available. About 450 German papers on weather and seasonal influences are listed and discussed, while reference is made to only about sixty in the English language, sixteen in French and three in Italian. In another sense also the work is quite a local product, for it deals largely with weather and seasonal effects as manifested in the storm belt of the middle temperate part of Europe. In this respect it is similar to much of the material presented in Petersen's volumes "The Patient and the Weather," which are largely limited to effects of weather in the stormy middle temperate regions of North America. Neither Petersen nor de Rudder deals with the broader aspects of the effects of weather as manifested also in nonstormy temperate regions or in subtropical and tropical warmth.

Studies and publications on weather and seasonal relationships with human health have in recent years become top-heavy along the lines of clinical observation and disease statistics. More fundamental studies under experimentally controlled conditions are badly needed if the complex effects of the various weather factors are to be analyzed and evaluated. More general observations under widely diverse natural climates and weather conditions must also be made. This volume by de Rudder makes no contributions along these more fundamental lines of meteorobiology. As a review of more of less localized clinical observations and correlations between weather and the occurrence of disease it fills a useful function, but the reader should bear in mind that here is presented an incomplete and one-sided picture of the general field of human meteorobiology. However, within the limited scope of his work de Rudder makes a clear and well systematized presentation.

There remains little doubt that short-cycle and seasonal changes in meteorologic states do quite definitely affect the

incidence of a great variety of human ailments. De Rudder leans heavily toward associating these human effects with the passage of polar and tropical "fronts," a view so ably upheld in America by Petersen in his many-volumed "The Patient and the Weather." The writings of both men are of great value in stressing the importance of the weather factor and in indicating the urgent necessity for an experimental analysis of the problem under controlled conditions.

Anniversary Volume: Scientific Contributions in Honor of Joseph Hersey Pratt on His Sixty-Fifth Birthday. By His Friends. Cloth. Price, \$7. Pp. 983, with illustrations. Lancaster, Pa.: Lancaster Press, Inc., 1937.

The group of papers here assembled represents a tribute to Dr. Joseph H. Pratt from his friends and students. It constitutes a tribute in the German manner of the festschrift to one of the ablest and best known of American physicians. It was hoped to include articles from Professors Krehl of Heidelberg and Morawitz of Leipzig, but their deaths unfortunately prevented these contributions. The individual papers, many of which have been published in the *Annals of Internal Medicine*, cover a wide range of subjects in experimental and clinical medicine. Among them may be mentioned those on the cardiac neurosis by White and Glendy, Bacillus Friedländer infections by Baehr and his associates, vitamin C and infection by Faulkner and Taylor, adrenal cortical tumor by Lawrence, effect of vitamin C on culture of tubercle bacilli by Heise and Steenken, several on various phases of medical history, and three on gout. Certainly no physician could receive a finer tribute than has Pratt in this group of splendid articles.

Leukemia and Allied Disorders. By Claude E. Forkner, A.M., M.D., Assistant Professor of Clinical Medicine, Cornell University Medical School, New York. Cloth. Price, \$5. Pp. 333, with 79 illustrations. New York: Macmillan Company, 1938.

It is perhaps surprising that a useful monograph of this size can be written about a disease which is defined in the first sentence as "an invariably fatal systemic disease of unknown etiology . . ." In compiling it, however, about 5,000 references have been consulted by the author, and the more important of these (about 1,600) are cited in the text and given in full at the end of the book. A real need is thus fulfilled and for the first time the important knowledge of leukemia to date is gathered together in one place and accompanied by such an extensive bibliography that the important original references can be easily located and consulted. The organization of the book is logical and should appeal to the neophyte in blood disease as well as to the specialist. There are a few errors, among which may be noted the legend for plate 1. The type could be more legible, but this is a minor criticism. While in no sense a contribution for the casual reader, this book is invaluable for a student of blood diseases and for the person who may wish to initiate original work in this field.

Studies on the Physiology of the Middle Ear. By J. Grandson Byrne, M.A., M.D., LL.D. Cloth. Price, 18s. Pp. 298, with 54 illustrations. London: H. K. Lewis & Co., Ltd., 1938.

This work will appeal primarily to the physiologist interested in hearing and to otologists capable of investigative work on this special sense on animals in a properly set up laboratory. The author concerns himself in large part with studying movements of the membrana tympani under varying experimental conditions. The different movements are graphically recorded and the experiments are done mostly on cats and dogs. By means of the necessary controls, tracings of the motions of the membrana tympani are made after administration of various drugs such as epinephrine and pilocarpine and following interference with or stimulation of the nervous pathways, incoming and outgoing, to the middle ear. The clinical significance of the various experiments and phenomena evoked are discussed in a brief fashion and the results obtained are compared with similar neuromuscular mechanisms affecting the pupils, lens and eyelids. For the practicing otologist the book may not present great interest. It does, however, bring rather forcibly to mind the increased attention that is being manifested in the physiology of the entire mechanism of hearing in the past few years, which received such great impetus from the phenomena uncovered by the work of Wever and Bray and from the increasing use of the exact methods of audiometry. More and more it seems clear that additions to knowledge in this

special field in the immediate future at any rate will not come from the practicing otologist as they have in the past but to the greatest extent from the laboratories of the psychologist, the physicist and the physiologist, often collaborating.

Applied Pharmacology. By A. J. Clark, M.C., M.D., F.R.C.P., Professor of Materia Medica and Pharmacology in the University of Edinburgh. Sixth edition. Cloth. Price, \$5. Pp. 678, with 84 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1938.

Since 1923, when Clark's *Applied Pharmacology* first appeared, it has been a helpful introduction to rational drug therapy based on sound physiologic principles and on the application of demonstrable actions of chemicals on living tissues. The present edition brings the book strictly down to the present with extensive changes including discussions on such new drugs as cyclopropane, vinethene, evipal, mandelic acid, sulfanilamide, carbarsone and the sterol hormones. The introductory chapter gives a brief but good review of systems of medicine and the basis for the practical applications of pharmacology. The discussion of principles of drug action has been expanded. The important subject of biologic standardization of drugs is too briefly considered and deserves fuller treatment. Considerable rearrangement of material has been made, disinfectants and chemotherapy being placed at the end of the volume instead of at the beginning. There is an excellent consideration of autopharmacology and of the endocrine glands. Throughout the volume appropriate discussions of physiologic principles introduce the analysis of pharmacologic evidence in order to lead to sound applications in therapy. An admirable illustration of this type of treatment is afforded in the chapter on respiration. Clark's *Applied Pharmacology* is now a standard textbook. It is useful not only for medical students but for practicing physicians. Unfortunately in this edition references to monographic and periodical literature have been considerably reduced. References only to general literature are afforded and these are not very extensive. The volume should not be considered as a reference work but rather as a well organized textbook.

Dyke's Automobile and Gasoline Engine Encyclopedia: The Elementary Principles, Construction, Operation and Repair of Automobiles, Gasoline Engines and Automobile Electric Systems; including Trucks, Tractors, Motorcoaches, Automotive Diesel Engines and Motorcycles; Simple, Thorough and Practical. By A. L. Dyke. Eighteenth edition. Cloth. Price, \$6. Pp. 1,312, with illustrations. Chicago: Goodheart-Willcox Company, Inc., 1937.

There are times when physicians may wish to know a bit more about the technical side of the automobile he is driving. He may wish to be more conversant with repair men in understanding their terminology. The eighteenth edition of Dyke's *Automobile and Gasoline Engine Encyclopedia* contains information on all of the leading makes of automobiles and on different types of gasoline engines as well as the principles of the construction, operation troubles, tests, adjustments and repairs of automobiles and their component parts. This volume has been on the market for more than twenty-seven years and has served as a reliable guide for mechanics and automobile owners. This edition also contains new subjects; for example, many of its readers may find the information on the Diesel engines of considerable interest. This type of engine appears to be gaining in importance, particularly for use in trucks, tractors and busses.

Fever Therapy: Abstracts and Discussions of Papers Presented at the First International Conference on Fever Therapy, College of Physicians and Surgeons, Columbia University, New York City, March 29, 30, 31, 1937. Cloth. Price, \$5. Pp. 486. New York: Paul B. Hoeber, Inc., 1937.

This volume is a useful record of a congress which correlated international work in a rapidly advancing field of therapeutics and demonstrated American leadership in the new realm. However, only the concise abstracts of the papers are printed, in the three official languages of the conference, English, French and German; the English section, in addition, contains the discussions. Thus the student looking for the full contents of any paper must seek elsewhere. The abstracts of the forty-five papers are conveniently grouped under divisions on physiology and pathology, fever therapy of miscellaneous diseases, fever therapy in syphilis and fever therapy in gonococcal infections. The volume also contains messages from the White House and from the honorary presidents, Wagner-Jauregg of Vienna and the venerable d'Arsonval of Paris.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Optometry Practice Act: Revocation of License for Nonpayment of Annual Registration Fee; Necessity for Notice of Revocation Proceedings.—One section of the Wyoming optometry practice act (Revised Statutes 1931, section 79-109) authorizes the board of examiners in optometry to revoke the license of a licentiate guilty of stated acts, after the licentiate has been given written notice of the charges against him and afforded an opportunity to defend himself, but on the revocation of a license the holder may appeal to the appropriate district court. Another section (section 79-110) requires every optometrist to pay an annual registration fee of \$2 before April 1 and provides that if a licentiate defaults in the payment of this fee his license may be revoked by the board "upon twenty days' notice of the time and place of considering such revocation," but this section makes no provision for an appeal to the courts from any judgment the board may render.

Frenzel, a licentiate of the Wyoming optometry board, moved from that state to Illinois in 1929. On January 12 of that year he tendered a check in payment of his annual registration fee for the year, but it was apparently not presented for payment until more than a month had elapsed and when presented it was not honored by the bank on which it was drawn, on account of insufficient funds. On April 24, 1929, the board addressed a registered letter to Frenzel at a stated address in Chicago, informing him that his license had been suspended and would probably be revoked at a stated meeting of the board to be held May 27, 1929. The letter was never received by Frenzel, as he had lived at the address stated for only a short time. On the date named the board revoked his license. Frenzel, however, at dates that are in dispute, made tenders of the statutory registration fees and requested that a license be issued to him. On the board's refusal so to do, he brought an action of mandamus to require the board to issue a certificate to him. The trial court rendered judgment in his favor and the board appealed to the Supreme Court of Wyoming.

The board contended first that, since the optometry practice act has provided that an appeal may be taken from the action of the board in revoking a license, mandamus was not the proper remedy. The Supreme Court pointed out, however, that the appeal authorized by section 79-109 of the act relates exclusively to the revocation proceedings authorized in that section, in instances in which licenses have been revoked for the causes there stated. It is apparent, said the court, that there is good reason for an appeal to the court in such a case, but no such reason exists in the case of a revocation of a license on account of the nonpayment of an annual registration fee. No evidence need be taken and the hearing on the question of revocation is but formal. Moreover, if notice is not received by the licentiate, he would have no opportunity to appeal. The provision in reference to an appeal to the courts, said the Supreme Court, cannot be held to apply in such a case and the contention that mandamus is not the proper remedy must be overruled.

The board next contended that it was the duty of the licentiate to pay the fee prescribed in the section requiring an annual registration fee and that the licentiate is charged with knowledge of that duty. That, said the court, is correct. At the same time, the board is one created by statute; its powers are limited to those prescribed by the legislature, and it must in the exercise of any power granted comply at least substantially with statutory provisions. The board contended, however, that it was not necessary to serve on the licentiate the notice required by law; that all that was necessary was that the board should make an honest attempt to serve notice; and that the notice was not ineffectual if, as in this case, it is sent to the last known post office address of the licentiate. But, said the court, the statute provides that twenty days' notice of the time and place of considering the revocation should be given. To provide for notice without service thereof would be futile; provision for notice necessarily includes the duty to serve it, and the Supreme Court

has held that, where notice is required to be served, its service must be personal, unless otherwise provided by statute, but that in the absence of a statute to the contrary, service may be made through the United States post office. The service in this case, however, attempted through the post office, was unsuccessful, and accordingly no notice whatever was given. The argument that an attempt, in good faith, to give notice, is a sufficient compliance with the statute and takes the place of actual notice is not sound. There was a purpose in making the provision, to give a further opportunity to the licentiate to comply with the law. It may be that the legislature might have dispensed with notice altogether. But it has not done so. It is not improbable that, when the legislative act in question was passed, no thought was given to situations like that confronting us here. That can be remedied in the future. But in this case, the law must be applied as we find it. The attempted revocation of the license of Frenzel, said the Supreme Court, was ineffective, and the judgment of the trial court directing the board of examiners in optometry to issue him a license was affirmed.—*State ex rel. Frenzel v. Wyoming State Board of Examiners in Optometry* (17yo.), 74 P. (2d) 343.

Privileged Communications: Disclosure of Condition by Patient as Waiver.—In a suit instituted by the plaintiff on a health and accident insurance policy, the defendant insurance company denied liability, alleging that the plaintiff in applying for insurance made certain false statements concerning his previous health and concealed facts pertinent to his then state of health. The policy was issued in June 1933 and, according to the plaintiff, he became disabled on July 14, 1934. At the trial the plaintiff testified in some detail concerning his then present physical condition. On his behalf a physician stated that the plaintiff became his patient on July 14, 1934, and testified fully as to his physical condition when he first examined him and on subsequent dates. The insurance company sought to show by another physician who had treated the plaintiff from 1931 to early in 1933 that the plaintiff had had pneumonia and was suffering at the date of the application of insurance from endocarditis, of which the plaintiff was fully aware. The trial court, however, held that such testimony was barred by the sections of the Nebraska statutes relating to privileged communications. From a judgment in favor of the plaintiff, the insurance company appealed to the Supreme Court of Nebraska.

One section of the Nebraska statutes (section 20-1206, Comp. St. 1929) provides that no practicing physician shall be allowed in giving testimony to disclose any confidential communication properly entrusted to him in his professional capacity and necessary and proper to enable him to discharge the functions of his office according to the usual course of practice. The following section (section 20-1207, *ibid.*), however, provides that the prohibition of the preceding section shall not apply to cases in which the patient in whose favor the provision operates waives the privilege thereby conferred and that if a patient, a party to any action, offers evidence with reference to his physical or mental condition or the alleged cause thereof the privilege conferred in the preceding section shall be deemed to have been waived as to any physician or surgeon who has attended that party. The plaintiff contended, however, that the waiver contemplated by the last section applied only to physicians who might have examined him after the disability in controversy began. Since the plaintiff and his physician fixed the beginning of disability as of July 14, 1934, and their testimony as to his physical condition was confined to that date and subsequent times, their testimony, plaintiff contended, did not operate as a waiver of privilege as to any physician who had examined him before that date.

The difficulty with that line of reasoning, said the Supreme Court of Nebraska, is that the law makes no such distinction, and courts are not inclined to read into a statute exceptions that the legislature has not seen fit to make. The purpose of the enactment making disclosures by a patient to his physician confidential was to encourage the patient more freely to disclose his ailments, because of the knowledge that such information could not be divulged to his humiliation or disgrace. Where the patient himself makes a disclosure of his condition, there can be no humiliation or disgrace in showing it existed over a longer period of time than the

closure may have indicated. Such was the purpose of the testimony proffered by the insurance company in this case and it was material to the issues and should have been received. The statute was never intended as a cloak for injustice or fraud and to give it the construction contended for by the plaintiff would in many instances lead to just that result. The Supreme Court accordingly held that it was error for the trial court to refuse the testimony of the physician produced by the insurance company and reversed the judgment of the trial court and remanded the cause for a new trial.—*Ausnes v. Loyal Protective Ins. Co. of Boston, Mass. (Neb.)*, 276 N. W. 397.

Workmen's Compensation Acts: Compensability of Heat Stroke.—The claimant's husband was employed by the defendant company to deliver ice on a commercial route. On July 11, 12 and 13 the heat was extreme, the temperature reaching a maximum of 106 F. during the day. On the evening of July 11 he was more tired than usual after his day's work. On July 12, after delivering ice until noon, he quit for the rest of the day; he complained of the heat and staggered on walking. On July 13 he returned to work but a helper made most of the deliveries for him. Late that afternoon, on his way home from work, he was overcome by the heat and suffered what was described in the medical testimony as a "collapse." He died the following day and an autopsy confirmed the diagnosis of heat stroke as the cause of death. The claimant thereupon brought proceedings under the workmen's compensation act of Minnesota against the employer for compensation for the death of her husband. From an order of the industrial commission awarding compensation, the employer appealed to the Supreme Court of Minnesota.

The employer contended that the claimant's husband had not sustained an accident within the meaning of the workmen's compensation act because this particular heat stroke was "of slow, gradual onset." The Supreme Court, however, could not agree with that contention, citing Minnesota cases to show that in that state heat stroke is accidental per se. Following those decisions, the court held that the heat stroke in the present case was accidental. Furthermore, in the opinion of the court, the accident occurred in the course of the deceased's employment even though his collapse had not occurred during his working hours. It is enough, said the court, that the causative agency was applied during the employment and was followed directly and immediately by the collapse without the intervention of a cause independent and unrelated to the employment. Accordingly, the Supreme Court affirmed the order of the industrial commission awarding compensation.—*Ueltschi v. Certified Ice & Fuel Co. (Minn.)*, 276 N. W. 220.

Workmen's Compensation Acts: Strain in Relation to Kinking of Ureters.—The claimant brought suit under the workmen's compensation act of Louisiana against his employer and his employer's insurance carrier to recover compensation for disability allegedly due to injuries to his back, kidneys and ureters as the result of his lifting a heavy iron pipe or his being jerked to the ground by the pipe. From a judgment awarding compensation to the claimant for permanent and total disability, the claimant's employer appealed to the court of appeal of Louisiana, second circuit.

The evidence presented at the trial tended to show that the claimant had sustained a strain of the lumbar region of his back or an injury to the muscles of his back. Urinalyses were of no pathologic significance. A medical witness for the claimant, a urologist, testified that cystoscopic and roentgen examinations of the claimant's kidneys and ureters revealed kinks of both ureters and a downward displacement of the left kidney with "enlargement of the functioning part of that kidney" but with no actual impairment of function. Two medical witnesses for the defendant, a roentgenologist and a urologist, testified that cystoscopic, urologic and roentgen examinations of the claimant's kidneys and ureters showed a slight hydronephrosis of the right kidney and kinks in both ureters. According to their testimony the left kidney was normal. They failed to find any evidence of any displacement of either kidney.

The medical testimony presented, said the court of appeal, was conflicting. Some of the medical witnesses were of the opinion that the claimant's condition was caused by the strain

or jerk and that it was sufficient to render him totally and permanently disabled. Other medical witnesses, however, were equally positive that his condition was not traumatic but was congenital and that he was not disabled. Although from a numerical standpoint, said the court, the medical witnesses favored the claimant's theory, testimony must be considered in the light of probability and not by counting the number of witnesses on each side. In the present case the evidence showed that the pain of which the claimant complained was confined to the left side of his back and yet there was no hindrance to the natural drainage of the left kidney. Many people, remarked the court, possess kinks in their ureters which are just as severe as the ones the claimant had and yet they experience no ill effects therefrom and are able to perform manual labor. Accordingly, the court of appeal concluded that the claimant had failed to prove that he was entitled to compensation and so reversed the judgment of the trial court awarding compensation.—*Jones v. Hunsicker (La.)*, 177 So. 262.

Miscarriage Resulting from Shock.—A watchman employee of the defendant oil company, suspecting that the plaintiff's husband was attempting to obtain a can of gasoline stolen from the property the watchman was guarding, shot at a car the husband was driving. The plaintiff, who was riding in the back seat, suffered a skin wound to the right of the occipital region. She was two months pregnant at the time and subsequently suffered a miscarriage. She sued the defendant oil company, alleging that the miscarriage was a result of the shock of being shot. She alleged further that she had suffered "a serious and permanent derangement of her female organs and functions as a result of the miscarriage and shock." At the trial her attending physician attributed the miscarriage to the shock of being shot. There was no medical testimony, however, to connect any derangement of her female organs and functions with the miscarriage or the shock. From a judgment for \$25,000 in her favor, entered on the verdict of the jury, the defendant appealed to the Supreme Court of Oklahoma.

It is well settled, said the Supreme Court of Oklahoma, that where a person's physical condition is such that medical testimony is necessary to describe it and to state its cause, such medical testimony must be given to the jury before a trial court is justified in submitting the issue to it. There was competent evidence in this case on which to submit to the jury the issue as to whether the plaintiff was shot and whether the miscarriage resulted from the resulting shock. There was, however, no evidence that any other injury resulted from the shot. Consequently, the trial court was not justified in submitting to the jury the issue arising out of the alleged injury to the plaintiff's female organs and functions, and its submission was prejudicial. The wound from the shot was inconsequential. The miscarriage, of course, was a serious matter. But the emphasis laid on the plaintiff's condition with relation to her female organs and functions undoubtedly, the court thought, accounted for the large verdict in the case. The court regarded the verdict for \$25,000 as excessive and accordingly reversed the judgment in favor of the plaintiff.—*Empire Oil & Refining Co. v. Fields (Okla.)*, 73 P. (2d) 164.

Society Proceedings

COMING MEETINGS

- Colorado State Medical Society, Estes Park, Sept. 7-10. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Idaho State Medical Association, Sun Valley, Sept. 6-10. Dr. Harold W. Stone, 105 North Eighth St., Boise, Secretary.
- National Medical Association, Hampton, Va., Aug. 15-19. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
- Oregon State Medical Society, Timberline Lodge, Aug. 24-27. Dr. Morris L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
- Society of American Bacteriologists, San Francisco, Aug. 30-Sept. 1. Dr. J. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.
- Utah State Medical Association, Ogden, Sept. 1-3. Dr. D. G. Edwards, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Washington State Medical Association, Bellingham, Aug. 29-31. Dr. V. W. Spickard, 1303 Fourth Ave., Seattle, Secretary.
- Wyoming State Medical Society, Laramie, Aug. 7-9. Dr. M. C. Keiser, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Pathology, Boston

14: 253-384 (May) 1938

- Degenerative Arthritis: Comparison of Pathologic Changes in Man and Equines. G. R. Callender and R. A. Kelsner, Ancon, Canal Zone.—p. 253.
- Studies on Experimental Rickets in Rats: II. Healing Process in Head of Tibia and Other Bones. G. S. Dodds and Hazel C. Cameron, Morgantown, W. Va.—p. 273.
- Pars Intermedia Basophil Adenoma of Hypophysis. A. T. Rasmussen and A. A. Nelson, Minneapolis.—p. 297.
- Study of Submaxillary Gland Virus of the Guinea Pig. F. S. Markham, Chicago.—p. 311.
- *Bone and Cartilage Lesions of Protracted Moderate Scurvy. A. W. Ham and H. C. Elliott, Toronto.—p. 323.
- Tuberculosis in Allergic and Desensitized Guinea Pigs: Study of Histologic Changes. H. S. Willis and C. E. Woodruff, Northville, Mich.—p. 337.
- *Fatty Infiltration of Liver and Development of Cirrhosis in Diabetes and Chronic Alcoholism. C. L. Connor, San Francisco.—p. 347.
- Primary Reticulum Cell Sarcoma of Lymph Nodes of Cow with Widespread Metastases. J. S. Bengston, Chicago.—p. 365.
- Experimental Infection in the Mouse Produced by Intratracheal Inoculation with *Haemophilus Pertussis*. W. L. Bradford, Rochester, N. Y.—p. 377.

Bone and Cartilage in Scurvy.—Ham and Elliott object to the terms "subclinical, scorbutic, latent and chronic scurvy" to designate the conditions produced by deficiencies of vitamin C. They suggest that the condition produced by a great deficiency be termed severe scurvy and that those conditions produced by lesser deficiencies be termed moderate and mild scurvy. They studied the epiphyseal lesions of scorbutic conditions on five groups of guinea pigs: controls, those receiving no vitamin C and three groups each of which was subjected to a different degree of deficiency. The long bones of the animals which grew under a handicap of deficiency were only slightly shorter than those of the controls but they were much lighter, dried specimens weighing only about three fourths of similarly treated control bones. The bones of the experimental animals were fragile, rough and discolored and they frequently exhibited fractures of the shaft near the epiphyseal plate. Many of the articulating surfaces were somewhat flattened and not uncommonly invaginated for a short distance into the epiphyses. Articular cartilage presents an uncalcified zone toward the joint cavity and a calcified zone toward the layer of bone which underlies and supports it. This shell of cartilage and underlying bone is normally supported by a scaffolding of cancellous bone. The uncalcified cartilage, the calcified cartilage and the supporting bone were all affected by protracted moderate scurvy. The supporting bone was diminished in amount and in some places there was none to support the cartilage. In some animals the zone of calcified cartilage encroached on the uncalcified cartilage so that a greater percentage of the articular cartilage was of the calcified variety. The uncalcified cartilage, in many sections, appeared thinner than normal. These fundamental changes were often accompanied by secondary changes. The weakened shell of cartilage and bone was often found distorted and fractured. Broken fragments of articular cartilage were found in masses of fibrous connective tissue which originated from the capsule. Capillaries were sometimes seen making their way into the uncalcified cartilage and these almost reached the surface in many instances. In some places, in which the cartilage had given way, the surface was covered with a layer or several layers of large cells with eccentrically located nuclei and basophilic cytoplasm. These cells resembled osteoblasts but were not associated with the matrix of the bone. The tips of the menisci in knee joints were often fibrinous in char-

acter. The connective tissue capsule of the joint, as well as the muscles associated with the joint, also showed lesions.

Fatty Infiltration of Liver and Cirrhosis.—According to Connor, fatty infiltration of the liver occurs in those conditions in which, because of a deficient intake or absorption of food, fat is mobilized from the existing fat depots and in which because of internal interference with the metabolism of fat due to anoxemia or tissue anoxia the accumulated fat cannot be broken down for use. In the starvation accompanying progressive morbid states the condition is of little pathologic importance, being in most cases terminal in nature. In diabetes the enlarged fatty liver may be influenced by insulin and by strict dieting but also may persist for many years. In alcoholism a variety of factors operate to produce the same condition. Alcohol alone will cause some fatty infiltration, but, as relative and sometimes absolute starvation is constantly associated with severe chronic alcoholism, fatty infiltration of the liver most often depends on a combination of these two. A liver containing demonstrable neutral fat is in most cases pathologic. Perilobular fibrosis seems to be the result of a combination of mechanical pressure, local tissue anoxia and general anoxemia, causing atrophy and degeneration of the cells of the liver. There are two types of liver in addicts to alcohol, one of which is the precursor of the other. The first is the enlarged tense liver so swollen with fat that the distended surface lobules present the appearance of cirrhosis. This effect is further simulated by the intrahepatic block, which interferes with the excretion of bile and the transmission of portal blood. The clinical signs of jaundice and ascites are thus produced. At necropsy the large liver is the only prominent finding. The lobules are distended with fat and some show, in addition, hyaline degeneration and atrophy of the peripheral cells associated with early proliferation of the fibroblasts. In the second form further proliferation of the connective tissue produces the typical picture of portal cirrhosis as seen in chronic alcoholism. The absence of fat in many such livers is explained by the exhaustion of body fat, by discontinuing the consumption of alcohol and resuming a normal or a high carbohydrate diet.

American Journal of Psychiatry, New York

94: 1259-1510 (May) 1938

- Paresis: Analysis of 511 Treated Cases. R. A. Matthews, Philadelphia; R. S. Bookhammer, Norristown, Pa., and W. H. Izlar, Miami, Fla.—p. 1259.
- Adjustment and Its Limits. E. Kahn, New Haven, Conn.—p. 1277.
- Clinicopathologic Considerations for Differential Diagnosis Between Juvenile Paresis and Other Forms of Encephalitis. A. Ferraro, S. E. Barrera, New York, and H. S. Gregory, Binghamton, N. Y.—p. 1291.
- Abstract of "One Hundred Years of Nonrestraint." E. Messinger, Northport, N. Y., and M. K. Amdur, Augusta, Ga.—p. 1307.
- Pharmacologic "Shock" Treatment of Chronic Schizophrenia. I. M. Rossman and W. B. Cline Jr., Wingdale, N. Y.—p. 1323.
- Observations in Hypoglycemic Treatment of Fifty-Five Cases of Schizophrenia. D. Ruslander, Buffalo.—p. 1337.
- Treatment of Psychoses with Pentametylenetetrazol. H. H. Goldstein, E. F. Dombrowski, J. V. Edlin, A. P. Bay, C. L. McCorry and J. Weinberg, Chicago.—p. 1347.
- *Blood Chemical Changes Occurring in Treatment of Psychogenic Mental Disorders by Metrazol Convulsions: Preliminary Report. S. Maurer, H. O. Wiles and C. M. Marberg, Chicago, B. Skorodin and M. L. Fisher, Manteno, Ill.—p. 1355.
- Rabies Vaccine in Treatment of Epilepsy. I. Finckelman, A. J. Arieff and M. A. Schiller, Chicago.—p. 1363.
- Use of Intravenous Methylene Blue in Status Convulsivus. L. Kajdi, Baltimore, and C. V. Taylor, Sykesville, Md.—p. 1369.
- Statistical Contributions from the Mental Hygiene Study of the Eastern Health District of Baltimore: II. Psychosis in the Eastern Health District: 1. Incidence and Prevalence of Psychosis in the Eastern Health District in 1933. B. M. Cohen and Ruth E. Fairbank, Baltimore.—p. 1377.
- Organic Background of Obsessions and Compulsions. P. Schilder, New York.—p. 1397.
- Psychoanalytic Clarification of Personality Types. E. E. Hadley, Washington, D. C.—p. 1417.
- Psychoanalytic Contributions to Conception of Disorder Types. N. L. Blizstein, Chicago.—p. 1431.
- The Psychology of the Swindler. W. Bromberg and S. Keiser, New York.—p. 1441.
- Parotid Gland Secretions in Manic-Depressive Patients. E. I. Strengin and L. E. Hinsie, New York.—p. 1459.

Blood Chemistry and Metrazol Convulsions.—Maurer and his associates have thus far used metrazol in the treatment of fifty-eight patients with psychogenic mental disorders at the Manteno State Hospital. They made quantitative measure-

ments of the pH , lactic acid, dextrose, carbon dioxide, phosphorus, calcium and chloride of the blood of nine patients before, during and at intervals after the convulsions produced by metrazol. The study showed (1) a marked acidosis during and immediately after the tonic convulsion, the blood acidity being as high as is compatible with life, (2) a profound shift in some of the electrolytes and (3) a recovery phase, varying in duration, in which the body recovers its chemical equilibrium. The chemical changes are sufficiently uniform in all patients for one to predict what levels may be expected during any phase of the convulsion.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

39: 673-848 (May) 1938

- *Roentgenographic Studies of Excretion of Dusts from Lungs. A. E. Barclay, K. J. Franklin and R. G. Macbeth, Oxford, England.—p. 673.
- Mediastinal Hernia in Absence of Pneumothorax. H. C. Maier, Ann Arbor, Mich.—p. 687.
- The Meningiomas: From a Roentgenologic Point of View. C. W. Schwartz, New York.—p. 698.
- Persistent Right-Sided Aortic Arch. L. H. Garland, San Francisco.—p. 713.
- Developmental and Life Cycles of Thoracic Aortic Aneurysms. E. Freedman, C. S. Higley and H. Hauser, Cleveland.—p. 720.
- Myelography with Thorotrast and Subsequent Removal by Forced Drainage: Experimental Study: Preliminary Report. W. A. Nosik and O. A. Mortensen, Madison, Wis.—p. 727.
- Rupture of Congenital Solitary Kidney: Report of Case in Which the Diagnosis Was Made During Life. L. G. Ericksen, South Bend, Ind.—p. 731.
- Calcinosi Universalis: Report of Case with Autopsy Findings. S. E. Gould, Eloise, Mich., and F. T. Raiford, Detroit.—p. 741.
- *Leukopenia and Leukocytosis in Lymphoblastoma: Their Reaction to Roentgen Therapy. F. H. Decker, Peoria, Ill.; E. T. Leddy and A. U. Desjardins, Rochester, Minn.—p. 747.
- Cervical Lymph Nodes in Intraoral Carcinoma: Surgery or Irradiation? J. J. Duffy, New York.—p. 767.
- Irradiation of Cervical Glands in Carcinoma of the Mouth and Lip. H. W. Jacob, Pittsburgh.—p. 778.
- Is Roentgen Irradiation of Value in Treatment of Pulmonary Metastasis from Mammary Cancer? N. Treves, New York.—p. 783.
- Protracted Roentgen Therapy of Pharyngeal Lymphosarcoma. A. Jutras, Montreal.—p. 792.
- Study of Back Scatter. Edith H. Quimby, L. D. Marinelli and J. H. Farrow, New York.—p. 799.
- Methods of Applying Radium Element in Form of Needles and Tubes. G. C. Wilkins, Manchester, N. H.—p. 816.

Excretion of Dusts from Lungs.—Barclay and his collaborators have insufflated radiopaque dusts into the lungs of healthy cats, in order to study their manner and rate of elimination. The radiopaque dusts used were bismuth carbonate, powdered lead glass and bismuth subnitrate. When due precautions are taken, insufflations of these dusts do not cause damage to the lungs. Insufflated dusts are not carried farther into the lungs than the distal termination of the ciliated epithelium; i. e., the defense against the penetration of dry dusts into the alveoli is extraordinarily efficient. Insufflated bismuth carbonate, which is neutral or slightly alkaline in reaction, is usually excreted in from one to four days. The subnitrate, which is strongly acid in reaction, is excreted slightly more rapidly. Insufflated lead glass powder is usually excreted in from seven hours to two days. The acidity or alkalinity of substances introduced into the lungs had no pronounced effect on the rate of excretion. Dusts mixed with various fluids and introduced into the trachea were not arrested by the ciliated epithelium but passed into the alveoli, from which they were slowly excreted over periods of weeks. There was no roentgenologic evidence that the dusts in these fluids passed to the lymph nodes during their excretion, though particles as small as 0.15 mm. are detected in roentgenograms, if the contrast medium used is adequate. The technic is sufficient to give a standard by which one may gauge the delay produced by pathologic processes occurring within the lungs. There is much to be said for the older technic of dust insufflation as opposed to that of injection of iodized oil.

Leukopenia and Leukocytosis in Lymphoblastoma.—Decker and his co-workers paid particular attention to the leukocyte count, before roentgen therapy was administered, of the 450 cases of lymphoblastoma observed at the Mayo Clinic. Leukocyte counts of 5,500 or less were considered as evidence of leukopenia, from 5,500 to 10,000 inclusive as normal and counts of more than 10,000 as evidence of leukocytosis. There

were twenty-five cases of leukopenia, twenty cases in which the leukocyte count was normal and twenty cases of leukocytosis. The average differential leukocyte count, before treatment, of these three groups indicates the presence of a normal percentage of lymphocytes in the cases with initial leukopenia, with a diminishing percentage as the total leukocyte count increased to normal or above. On the other hand, the percentage of the polymorphonuclear leukocytes increases as the total leukocyte count rises, as is shown by a comparison of the average differential count, before treatment, of the three groups. Other than the lymphocytes and polymorphonuclear neutrophils there is little variation, unless the presence of 5 per cent transitionals is considered of some importance. As the total number of leukocytes increases, the percentage of polymorphonuclear neutrophils frequently increases, while the percentage of lymphocytes decreases proportionately, regardless of the duration of the disease. Eosinophilia was present in the group with initial leukopenia in a percentage greater than 5 in five cases. The highest percentage of transitional cells was 9; in several cases it was 6 per cent. Among the patients with initially normal counts, the highest percentage of transitional cells was 8.5. In the group with initial leukocytosis, the only variation of significance was the presence in one case of 42 per cent of eosinophilic cells; in all the other cases it was 5 per cent or less. After irradiation, the total leukocyte count fluctuated considerably. The leukocyte count of fourteen patients with initial leukopenia averaged 4,700 on their first visit, before any treatment had been given. Approximately four weeks later, after one roentgen treatment, the average leukocyte count was 3,957. The available data for the third visit were averaged; the leukocyte count was 4,270. The data beyond the third visit are extremely varied and do not permit generalization. The group with initially normal counts was analyzed in the same manner. The leukocyte count averaged 22.4 per cent less than before treatment and 33½ per cent less at the third visit. A study of the changes in the patients with initial leukocytosis shows that the average before treatment, 16,070 cells, was reduced to 6,866 cells, or 58.6 per cent less at the second visit, and had recovered only to a slight extent at the time of the third visit, when the average count was 7,900 even though partial or complete treatment was given in each instance. A comparison of the average differential counts in the group with leukocytosis, before the first treatment and four weeks after the first treatment, shows that the most marked destruction involved the polymorphonuclear leukocytes, both in percentage and in absolute numbers. From this study, leukopenia does not have any prognostic significance. Leukopenia in lymphoblastoma is not a contraindication to roentgen therapy. Initially normal leukocyte counts (between 5,500 and 10,000) occurred in 58.5 per cent of the series of 450 cases; a count of more than 10,000 in 36 per cent.

Annals of Internal Medicine, Lancaster, Pa.

11: 1925-2078 (May) 1938

- The Function of the College. J. H. Means, Boston.—p. 1925.
- New Experimental Data on Artificial Hyperthermia. A. Bessemaert, Ghent, Belgium.—p. 1933.
- Drugs in the Treatment of Heart Disease. R. L. Levy, New York.—p. 1946.
- *Use of Mercurial Suppository as Diuretic. J. Flexner, New York.—p. 1962.
- Some Public Health Aspects of Undulant Fever. H. G. Newman, St. Louis.—p. 1973.
- Protamine Zinc Insulin in Diabetes. E. P. McCullagh, Cleveland.—p. 1979.
- *Association of Sciatic Neuritis with Liver Disease. S. S. Lichtman, New York.—p. 1992.
- *Response to Feeding of Cevitamic Acid in Normal and Deficient Subjects as Measured by Vitamin C Excretory Test. Elaine P. Rall and G. J. Friedman, New York.—p. 1996.
- Peptic Ulcer: Effect of Administration of Bile on Behavior of the Disease. E. S. Emery Jr. and M. A. Schnitker, Boston.—p. 2007.
- Exercise Tests and the Electrocardiograph in the Study of Angina Pectoris. M. E. Missal, Rochester, N. Y.—p. 2018.

Mercurial Suppositories and Diuresis.—Flexner used mercurial suppositories on twenty occasions in ten patients with varying degrees of cardiac decompensation. These patients were treated regularly by rest in bed, sedation, digitalis and restricted fluid intake. In seventeen instances a

diuresis ranging from 1,950 to 8,750 cc. resulted in twenty-four hours from the use of the suppositories. In one of the failures the diuresis was delayed until the third day of ammonium chloride therapy. The other two failures were obtained in a case presenting renal complications. Renal insufficiency followed the mercurial suppositories and administration of ammonium chloride; the subsequent death of this patient was apparently caused by a cerebral embolus. In two cases of hepatic cirrhosis studied, mercurin suppositories did not seem to be the best form of administering mercury, as it produced rectal discomfort and there was no consistent increase in urinary output.

Sciatic Neuritis and Hepatic Disease.—Lichtman reports five cases which indicate that the symptoms of sciatic neuritis in some instances may be the precursors of hepatic insufficiency. Though an analgesic effect of hepatitis and jaundice on sciatic pain has been observed, the possible relationship between the jaundice and the antecedent sciatic pain has escaped notice. Such a relationship may be important, for the development of jaundice, sometimes fatal, has recently been ascribed to the use of cinchophen prescribed for its analgesic effect. Sciatic neuritis may be an early manifestation of a disease process which may lead to hepatic disease and insufficiency. Endogenous or exogenous toxic agents may affect peripheral nerves before their hepatic effects become manifest clinically. Careful interrogation with regard to the history has eliminated the possibility of cinchophen in any form in three of the cases cited.

Response to Ascorbic Acid.—Ralli and Friedman determined the three hour urinary excretion of vitamin C before and after an intravenous test dose of 100 mg. of ascorbic acid in twelve normal adults, three normal individuals on diets low in vitamin C and twenty-two cases of scurvy. The three and twenty-one hour excretion was studied in the same group after an intravenous test dose of 100 mg. of ascorbic acid and the intravenous test dose was repeated in all three groups following the feeding of ascorbic acid. Following the intravenous test dose the twelve normal subjects excreted an average of more than 40 per cent of the injected vitamin within three hours. The extremes were from 24 to 82 mg. The three patients with subnutrition excreted from 5 to 14 mg. The patients with scurvy excreted from 0 to 5 mg. Following the ingestion of 1,000 mg. of ascorbic acid to the subnutrition subjects, the three hour excretion rose to the normal level after the test dose. In order to increase the urinary excretion to the normal level in the patients with scurvy, much larger amounts of the vitamin had to be fed. In the normal group the ingestion of ascorbic acid in small doses increased the vitamin C excretion above the original level. Excretion tests were also done following an intravenous test dose of 500 mg. of ascorbic acid in normal and scorbutic subjects. The normal subjects excreted an average of 55.8 per cent and the scorbutic patients an average of 7 per cent. The results suggest that the urinary excretion of vitamin C following an intravenous test dose of 100 mg. of ascorbic acid will serve as an index of vitamin C deficiency or subnutrition and as a guide to show the degree of saturation of the tissues following the ingestion of ascorbic acid.

Archives of Otolaryngology, Chicago

27: 519-660 (May) 1938

- Sulfanilamide in Treatment of Experimental Streptococcal and Pneumococcal Meningitis. J. A. Kolmer, with assistance of Anna M. Rule and Mary L. Werner, Philadelphia.—p. 519.
- Studies in Mechanism of Action of Sulfanilamide: II. Sulfanilamide in Treatment of Experimental Streptococcal Meningitis. P. E. Adolph and J. S. Lockwood, Philadelphia.—p. 535.
- Retropharyngeal and Cervical Emphysema: Report of Case. S. H. Gidoll, San Francisco.—p. 552.
- Endaural, Antauricular Surgical Approach to the Temporal Bone: Principles Involved in This New Approach: Summary Report of 1,780 Cases. J. Lempert, New York.—p. 555.
- Air Cells of Petrous Portion of Temporal Bone in a Child Four and a Half Years Old: Study Based on Wax Plate Reconstructions. B. J. Anson, J. G. Wilson and J. P. Gaardsmoec, Chicago.—p. 588.
- Treatment of Chronic Catarrhal Deafness with the Eustachian Heat Bougie. E. Simon, Albany, N. Y.—p. 606.
- Plastic Surgery, 1936-1938. R. H. Ivy and H. A. Miller, Philadelphia.—p. 622.

Archives of Pathology, Chicago

25: 777-940 (June) 1938

- Inflammation of Serous Surfaces: Hydrogen Ion Concentration in Relation to Cell Type. B. Steinberg and A. Dietz, Toledo, Ohio.—p. 777.
- Id.: Transfer of Living Leukocytes and Effect on Acute Infectious States. B. Steinberg, Toledo, Ohio.—p. 785.
- Id.: Factors Modifying Types of Cell Response. B. Steinberg and Ruth A. Martin, Toledo, Ohio.—p. 792.
- Loss of Acidophilic Granules from Pituitary of Guinea Pig Under Experimental Conditions of Increased Metabolism. Isolde T. Zeckwer, Philadelphia.—p. 802.
- Bronchiogenic Distribution of Fluid and Particulate Matter: Its Site of Predilection and Mechanism of Transfer. H. S. Reichle, Cleveland.—p. 811.
- Congenital Aneurysm of Membranous Septum. M. Lev and O. Saphir, Chicago.—p. 819.
- *Lymphadenoid Goiter. C. A. Hellwig, Wichita, Kan.—p. 838.
- "Aniline Tumors" of the Bladder. W. C. Hueper, Wilmington, Del.—p. 856.

Lymphadenoid Goiter.—Hellwig observed at St. Francis Hospital four cases corresponding in every detail with those reported by Hashimoto (struma lymphomatosa) and Williamson and Pearce (lymphadenoid goiter). His observations led to conclusions which are at variance with the view expressed by most writers. The cases suggest (1) that lymphadenoid goiter is a distinct pathologic and clinical entity and has no relation to Riedel's struma, (2) that it is not a true inflammatory process—not any more than so-called chronic cystic mastitis and (3) that the histologic changes characteristic of lymphadenoid goiter may be present in typical exophthalmic goiters. Lymphadenoid goiter is the result of a functional disorder. The cycle of colloid storage and release is fundamentally disturbed, and the exhaustion of colloid explains the symptoms of hypothyroidism, associated so often with this type of goiter. The underlying cause of lymphadenoid goiter is probably an excess of thyrotropic hormone.

Canadian Public Health Journal, Toronto

29: 203-254 (May) 1938

- Some Fundamentals in Tuberculosis Prevention. R. G. Ferguson, Fort San, Sask.—p. 203.
- Survey of Incidence of Venereal Diseases in Ottawa, Canada, November 1937. J. T. Clarke, Ottawa, Ont.—p. 213.
- Notes on Early History and Evolution of the Department of Health of Montreal. E. Gagnon, Montreal.—p. 216.
- Experimental Infection with *Haemophilus Pertussis* and Protection Tests in Mice. N. Silverthorne, Toronto.—p. 233.
- *Brucellosis In and Around Vancouver. C. E. Dolman and Vivienne G. Hudson, Vancouver, B. C.—p. 236.

Brucellosis In and Around Vancouver.—From March 1936 to March 1938 Dolman and Hudson received and examined for *Brucella* agglutinins a total of 1,296 separate samples of raw milk from fifty-five dairies in Vancouver. Of this total, 704 samples (54.3 per cent) showed complete agglutination in one or more tubes of the range adopted, while a further 168 (13 per cent) gave a doubtful reading. Thus less than 33 per cent of the samples were completely negative for *Brucella* agglutinins. There were nine dairies among 213 samples of which no negative specimen was found. Three dairies which yielded no positive specimens among sixty samples and forty-three dairies and their 1,023 specimens of milk showed a great preponderance of positive and doubtful results. Samples of blood serum sent to the Provincial Laboratories for Widal tests during the last six years from some 5,420 persons have been tested regularly for *Brucella* agglutinins. The results obtained with one group of 5,068 specimens, sent in by physicians of Vancouver and adjacent municipalities, shows the incidence of positive samples to be 4.5 per cent. Few of these specimens were sent in under a provisional diagnosis of brucellosis, and there is no information regarding the clinical signs and symptoms from which the majority of the 228 persons with positive serums may have been suffering. The results shown by this group may be contrasted with those given by a group of 352 specimens received from employees of a logging camp and from residents of a paper pulp company town, living remote from Vancouver and its milk supply. In this group only two specimens, or 0.57 per cent, were positive and gave complete agglutination in serum dilutions no higher than 1:40 and 1:80 respectively. No attempt was made to trace the clinical history of every patient with a positive serum in these groups, but in

recent months, with the cooperation of the physicians concerned, fifteen cases of undoubted acute brucellosis have been diagnosed on both laboratory and clinical grounds. In every case the evidence has pointed to the consumption of raw milk as the primary etiologic factor.

Johns Hopkins Hospital Bulletin, Baltimore

62: 475-564 (May) 1938

- Coarctation of Aorta with Unequal Blood Pressure in the Arms: Case Report. R. G. Hills, Baltimore.—p. 475.
- *Cervitamic Acid Content of Fetal Blood. C. P. Manahan and N. J. Eastman, Baltimore.—p. 478.
- Studies Concerning Hypertension in Childhood: I. Development of Essential Hypertension Under Observation. Helen B. Taussig and M. S. Hecht, Baltimore.—p. 482.
- Id.: II. Occurrence of Hypertension in Acute Rheumatic Fever in Childhood. Helen B. Taussig and M. S. Hecht, Baltimore.—p. 491.
- Researches on Tetanus: VII. (1) Time Required for Fixation of Fatal Quantity of Tetanus Toxin; (2) Return Passage of Toxin by Way of Lymphatic Capillaries to Cardiovascular System; (3) Return Passage as Basis of Method for Approximate Determination of Volume of Lymph in Closed Lymphatic System. J. J. Abel, Bettylee Hampil, A. F. Jonas and W. Chalian, Baltimore.—p. 522.

Ascorbic Acid in Fetal Blood.—Manahan and Eastman subjected twenty-five white women and the same number of Negroes, all taken at random, to venipuncture at the moment of delivery. Samples of fetal blood were also obtained by venipuncture of the umbilical vein. The two samples were analyzed for ascorbic acid by the method of Tillmans, Hirsch and Hirsch. To ten additional patients 100 cc. of orange juice was administered three times daily during the last few weeks of the antepartum period and the two bloods were analyzed at delivery for ascorbic acid. The results confirm those of Braestrup and leave little doubt that the content of ascorbic acid of the fetal blood is regularly from two to four times that of the maternal blood. The question arises whether the reducing substance which one analyzes in fetal blood as ascorbic acid is the true vitamin or is, partly at least, some other substance capable of reducing the phenolindophenol of the Tillmans procedure. The fact that it is possible to raise the concentration of ascorbic acid of the fetal blood by administering orange juice to the mother speaks against such a hypothesis. The relatively high concentration of ascorbic acid in the fetal blood suggests that the placenta exerts a selective action with respect to this vitamin.

Journal of Bacteriology, Baltimore

35: 455-560 (May) 1938

- Studies on Anaerobiosis: I. Nature of Inhibition of Growth of Cyanide-Treated *Escherichia Coli* by Reversible Oxidation-Reduction Systems. R. H. Broh-Kahn and I. A. Mirsky, Cincinnati.—p. 455.
- Method for Concentration of Poliomyelitis Virus in Nasopharyngeal Washings. J. R. Paul, with technical assistance of G. Blezinger, New Haven, Conn.—p. 493.
- Dissociation of Single Cell Cultures of *Staphylococcus Aureus*. Rachel E. Hoffstadt and G. P. Youmans, Seattle.—p. 511.
- Influence of Diet on *Lactobacillus Acidophilus* Content and Hydrogen Ion Concentration of Intestine. L. Weinstein, J. E. Weiss and R. W. H. Gillespie, New Haven, Conn.—p. 515.
- Metabolism of Pathogenic Bacteria: I. Bacteriologic and Chemical Methods. T. E. Friedemann, Chicago.—p. 527.
- Factors Influencing Rate of Fermentation of *Streptococcus Lactis*. O. Rahn, C. P. Hegarty and R. E. Deuel, Ithaca, N. Y.—p. 547.

Journal of Nutrition, Philadelphia

15: 411-524 (May) 1938

- Effect of Varied Vitamin B Ingestion on Appetite of Children. F. W. Schlutz and Elizabeth M. Knott, Chicago, with cooperation of Nerinne Isaacson Stage and M. L. Reymert.—p. 411.
- Studies on Vitamin B₁ Requirements of Growing Rats. A. Arnold and C. A. Elvehjem, Madison, Wis.—p. 429.
- Relation of "Grass Juice Factor" to Guinea Pig Nutrition. G. O. Kohler, C. A. Elvehjem and E. B. Hart, Madison, Wis.—p. 445.
- Technic of Measuring Radiation and Convection. J. D. Hardy and E. F. Du Bois, with technical assistance of G. F. Soderstrom, New York.—p. 461.
- Basal Metabolism, Radiation, Convection and Vaporization at Temperatures of 22 to 35 C. J. D. Hardy and E. F. Du Bois, with technical assistance of G. F. Soderstrom, New York.—p. 477.
- Effect of Urea on Human Respiratory Exchange and Alveolar Carbon Dioxide. T. M. Carpenter, Boston.—p. 499.
- Basal Metabolism in Pregnancy. J. A. Johnston, Helen A. Hunseber, Frances Cope Hummel, Mary F. Bates, Priscilla Bonner and Icie G. Macy, Detroit.—p. 513.

Journal of Pediatrics, St. Louis

12: 563-700 (May) 1938

- Focal Infection and Metabolism: Effect of Removal of Tonsils and Adenoids on Nitrogen Balance and Basal Metabolism. J. A. Johnston and J. W. Maroney, Detroit.—p. 563.
- Immunologic Reactions for Undulant Fever in Apparently Healthy and in Tuberculous Children. J. R. Lewin and I. Gersh, Denver.—p. 571.
- *Effects of Tannic Acid Nasal Sprays on Incidence of Upper Respiratory Infections. Margaret Harper McKee, Irvington, N. Y.—p. 576.
- Hurler's Syndrome (Gargoylism): Summary of Literature and Report of Case with Autopsy Findings. R. J. Kressler and E. E. Aegerter, Philadelphia.—p. 579.
- Ehlers-Danlos Syndrome. A. C. Rambar, Chicago.—p. 592.
- Significance of *Shigella Alkalescens* (Andrewes): Clinical Appraisal of Nine Cases from Which Organism Was Isolated. P. V. Woolley Jr. and Marian Sweet, Boston.—p. 596.
- *Care of Skin of the Newborn Infant—Prevention of Infection. L. H. Smith, Portland, Ore.—p. 603.
- Granulocytopenia and Hyperleukocytosis Following Sulfanilamide Therapy. G. R. Alpert and R. P. Forbes, Denver.—p. 605.
- *Use of Sulfanilamide in Gonococcal Infections in Children. J. W. Holmes, J. A. Jones and N. Gildersleeve, Philadelphia.—p. 610.
- Simultaneous, Bilateral, Postdiphtheritic, Diaphragmatic Paralysis Treated by Mechanical Respirator, with Recovery. A. H. Neffson and S. M. Wishik, New York.—p. 616.
- Active Immunization Against Pertussis with Formalized Vaccine. M. L. Blatt, I. M. Levin and I. E. Schapiro, Chicago.—p. 619.
- Von Gierke's Glycogen Storage Disease: Case Report with Unusual Findings. M. M. Fliess, Clifton Forge, Va., and S. M. Bloom, New York.—p. 635.
- Varicella Complicated with Acute Thrombocytopenic Purpura and Gangrene. A. V. Stoesser and W. W. Lockwood, Minneapolis.—p. 641.
- Influence of Factors Before and at Time of Delivery on Premature Mortality. B. B. Breese Jr., Rochester, N. Y.—p. 648.

Tannic Acid Nasal Sprays and Catarrh.—In an effort to determine the effect of blocking the nasal passages on the incidence of the common cold McKee used a 4 per cent solution of tannic acid as a nasal spray. The 105 children with rheumatic disease used for the study were divided into two groups. The nasal passages of fifty-four were sprayed and fifty-one received no treatment and constituted the controls. Approximately 70 per cent of the children in each group had one or more infections of the upper part of the respiratory tract during the period of observation, November 1936 to April 1937, averaging 1.1 or 1.2 episodes per patient. In about 50 per cent of the cases the predominating symptoms and signs were localized in the throat and in the rest the nasal passages were mainly involved. The number of children having obvious chronic sinusitis, pharyngitis, coryza, adenitis and streptococcal infections was about evenly divided. Four untreated and only one treated child had frank tonsillitis associated with a marked elevation of temperature. The number of attacks of rheumatic fever in the two groups was nearly alike: three attacks in the treated and eight in the untreated children were preceded by infections of the upper part of the respiratory tract; of these, two in the treated and five in the control group were associated with streptococci. It is probable that blocking of the nasal passages affords effective protection only in those diseases which are caused by strictly neurotropic viruses.

Prevention of Cutaneous Infection of the Newborn.—According to Smith, since February 1935 oiling and bathing the newborn infant has been discontinued at the Multnomah County Hospital. Previous to this, a 1 per cent copper oleate had been used and a great reduction in the incidence of pyoderma ensued. But with 1,734 babies receiving no treatment only two cases of suggestive pyoderma occurred. The technic is simply not to clean the baby after birth; that is, the vernix caseosa is not removed. Excess blood is wiped off, but that is all. The skin is neither bathed nor oiled during the infant's stay in the hospital. Warm water is used to clean the buttocks following each stool. Each day the clothing is changed, but the infant is not bathed or oiled. Within twelve hours after birth the infant's skin is clean; the vernix has disappeared. The only areas to be watched are the axillae and the groin, for, if the vernix caseosa has not "dried" in these areas, the skin may remain moist and show irritation. It is believed that the lessened handling of the infant's skin prevents cutaneous infection. The most satisfactory treatment when any cutaneous irritation of the newborn occurs, even when pyoderma is suspected, is a powder composed of three parts of mercurous chloride, two parts of talcum and one part of zinc oxide.

Sulfanilamide in Gonococcic Infections in Children.—Holmes and his associates used sulfanilamide in fifty-one cases of gonorrhea in children. These included forty-seven cases of vulvovaginitis and four cases of urethritis in the male. Five of the girls were treated by means of suppositories containing sulfanilamide, the balance received the drug by mouth. Daily administration of 0.6 Gm. of sulfanilamide per 20 pounds of body weight gave practically no untoward effects. Three of the male patients failed to show any improvement. The five patients with vulvovaginitis treated by suppositories containing sulfanilamide showed no improvement. Of the forty-two patients with vulvovaginitis treated by sulfanilamide by mouth, only sixteen were temporarily relieved, and of these eight had recurrences.

Medical Annals of District of Columbia, Washington
7: 137-170 (May) 1938

- The Mental Hospital of Yesterday and Today. W. Overholser, Washington.—p. 137.
*Wheat Germ Oil (Vitamin E) in Treatment of Repeated Spontaneous and Threatened Abortion: Preliminary Report. J. K. Cromer, Washington.—p. 145.
The Eye in Diabetes Mellitus. B. Rones, Washington.—p. 149.
Present-Day Treatment of Tuberculosis in Sanatoriums of the District of Columbia. J. W. Peabody, Washington, and D. L. Finucane, Glenn Dale, Md.—p. 153.
Endobronchial Tumors: Diagnosis and Treatment. E. W. Davis, Washington.—p. 157.

Wheat Germ Oil in Abortion.—Cromer gave wheat germ oil (vitamin E) to four women who had sustained one or more recurrent abortions prior to the vitamin E therapy. One of these went to term and delivered a full term, healthy child of 6 pounds 14 ounces (3,300 Gm.). One had a partial separation of the placenta at eight months and delivered an infant which weighed 4 pounds 9 ounces (2,190 Gm.). This infant survived. Another one terminated spontaneously about the twentieth week, eight weeks after wheat germ oil therapy was begun. The fourth patient went to term and delivered a normal female infant which weighed 7 pounds 4 ounces (3,480 Gm.). Three patients were treated for threatened abortion after the symptoms had begun. Of these, one went to term and delivered a normal child weighing 7 pounds 5 ounces (3,510 Gm.) without further trouble. Another had several episodes with cramps and bleeding but finally delivered a living child weighing 6 pounds 12 ounces (3,240 Gm.) two weeks before term after premature rupture of the membranes. The third patient, after several attacks of uterine pain with bleeding, finally went to term and delivered a normal female infant which weighed 6 pounds 6 ounces (3,060 Gm.).

Military Surgeon, Washington, D. C.

S2: 385-484 (May) 1938

- Veterans' Administration and Its Fight Against Tuberculosis: The Hospitalization of Tuberculous Veterans. F. T. Hines.—p. 385.
"The Doctor Stays at Home." C. L. Beaven.—p. 391.
Rabies in Coyotes. G. E. Ledfors and W. E. Seiler.—p. 400.
Umbilical Hernia: Case Report. F. J. Vokoun.—p. 416.
Report on Ninth International Congress of Military Medicine and Pharmacy: Comparative Study of Supply of Foodstuffs and Alimentation of the Sick and Wounded in Times of Peace and War. W. S. Bainbridge.—p. 417.
The Organization and Functions of the Medical Services in Combined Operations of Land and Sea Forces. W. L. Mann and E. E. Hume.—p. 439.
Simultaneous Bilateral Spontaneous Pneumothorax: Case Reports. L. J. Weinstein.—p. 453.
The Life of Charles Stuart Tripler. J. M. Phalen.—p. 459.

New York State Journal of Medicine, New York

3S: 677-756 (May 1) 1938

- Some Unusual Complications Associated with Abruptio Placentae. E. C. Hughes and A. W. Van Ness, Syracuse.—p. 677.
Tuberculin Test of School Children: Comparative Values. G. W. Weber, Albany; F. W. Holcomb, Kingston, and K. M. Murphy.—p. 685.
Carcinoma of the Skin: Practical Phases. J. J. Eller, New York.—p. 689.
The Complement Fixation Test: Diagnostic Aid in Control of Genorhea. Emily Dunning Barringer, New York.—p. 699.
Problem of Peripheral Vascular Disease. A. N. Curtiss, Syracuse.—p. 705.
Inhalation and Pneumatic Treatments. M. Weiss, New York.—p. 713.

Public Health Reports, Washington, D. C.

53: 701-746 (May 6) 1938

- Trends in Shellfish Sanitation. H. N. Old.—p. 720.
Planning the Organization and Conduct of Stream Pollution Surveys. J. K. Hoskins.—p. 729.

53: 747-792 (May 13) 1938

- Studies on Dental Caries: I. Dental Status and Dental Needs of Elementary School Children. H. Klein, C. E. Palmer and J. W. Knutson.—p. 751.
Experimental Vanadium Poisoning in the White Rat. Esther Peterson Daniel and R. D. Lillie.—p. 765.
Influence of Nonbreeding and Foster Nursing on Occurrence of Spontaneous Breast Tumors in Strain C₃H Mice. H. B. Andervont and W. J. McEleney.—p. 777.

Southern Medical Journal, Birmingham, Ala.

31: 579-708 (June) 1938. Partial Index

- Pseudomycosis: Indolent Leg Ulcer: Study of Fifty-Four Patients. J. F. Hamilton, Memphis, Tenn.—p. 579.
*Arthus Phenomenon from Mosquito Bites: Report of Case with Experimental Studies. A. Brown, T. H. D. Griffiths, S. Erwin and L. Y. Dyrenforth, Jacksonville, Fla.—p. 590.
Heredity in Cancer of the Breast. M. J. Tendler, Memphis, Tenn.—p. 602.
Rupture of Biceps Brachii: Report of Fourteen Cases. R. L. Waugh, New Orleans.—p. 619.
Congenital Lung Cysts, Air Expansile Types. W. W. Andersen, Atlanta, Ga.—p. 628.
Urinary Findings in the Newborn: Report of Three Cases of Neonatal Nephritis. C. E. Conrad, Harrisonburg, Va.—p. 636.
Roentgenologic Treatment of Various Blood Dyscrasias. J. J. Clark, Atlanta, Ga.—p. 641.
Fatality from Acute Hemolytic Anemia Which Developed During Administration of Sulfanilamide. H. Wood, Charleston, S. C.—p. 646.
Circulatory versus Respiratory Deaths from Pentothal Sodium. C. Reynolds and J. R. Veal, New Orleans.—p. 650.
Analysis of 400 Instances of Chronic Bromide Intoxication. F. M. Hanes and Anne Yates, Durham, N. C.—p. 667.
Gastric Acidity as Manifestation of Extragastric Disease. F. L. Apperly, Richmond, Va.—p. 671.
Ethyl Esters of Chaulmoogra Oil Therapy in Treatment of Mycosis Fungoides. S. J. Wilson, Fort Worth, Texas.—p. 675.
Mycotic Infections in Otolaryngology. W. D. Gill, San Antonio, Texas.—p. 678.

Arthus Phenomenon from Mosquito Bites.—Brown and his collaborators report an instance of the phenomenon of Arthus, the causative agent of which was *Aedes aegypti*, a household mosquito common in the Southern states. Necrosis of the skin in this girl of 18 (at the time of death) resulting from mosquito bites is apparently unique in the literature. The formation of blebs, varying in size from a pea to a half dollar (30 mm.) but without subsequent necrosis and scarring, was first noticed when she was 2½ years old. In 1930, at the age of 11, the swelling of the arms and legs from multiple mosquito bites had persisted well into the fall and was accompanied by a hardness of the tissues, formerly absent. Thereafter the seasonal swelling coincident with the mosquito season had lasted longer each season, and the induration had become more marked and persistent after the disappearance of mosquitoes. In the opinion of Pusey, who saw the patient, this case was unlike any he had seen and he accepted the diagnosis of the Arthus phenomenon from the bite of *Aedes aegypti*. There was repeated and invariable demonstration of lesions occurring after experimental bites and progressing through characteristic and protracted evolution to typical scarring. The patient had a history of familial allergy. The type of lesion, its evolution and improvement in general health were unaltered by autogenous staphylococcus vaccine, mosquito vaccine, gonadotropic substance, thyroid medication and diet. The early characteristics of this case from the onset to the seventh year, when the lesions were bullous and healed without scar formation, were similar to the reactions described by Jenner and Bode, suggesting that it was a more aggravated manifestation of a similar phenomenon due to the bite of an insect, in this instance *Aedes aegypti*. The positive Prausnitz-Küstner reaction would definitely place this case in the allergic category. Biopsies of delayed reactions, when necrosis was in progress, showed eosinophilic infiltration indicative of allergy. The blood eosinophilia of allergy was present five minutes after the patient was bitten by mosquitoes. Partial protection from bites by the intradermal injection of a normal person's blood serum into the patient, the reverse Prausnitz-Küstner reaction, constituted a measure of local passive immunity.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anaesthesia, Manchester

15: 85-132 (April) 1938

"Death on the Table." G. Edwards.—p. 87.

Nembutal-Chloral Narcosis in Childbirth. F. B. Mallinson.—p. 104.

British Journal of Radiology, London

11: 273-344 (May) 1938

Radiologic Experience in Ventriculography. E. Lysholm.—p. 273.

Low-Voltage, Near-Distance X-Ray Therapy. J. F. Bromley.—p. 289.

The After-Care of Patients Suffering from Breast Cancer. F. Hernaman-Johnson.—p. 297.

Marble Bones: Case. J. S. Verco.—p. 311.

Dosage System for Interstitial Radium Therapy: Part II. Physical Aspects. H. M. Parker.—p. 313.

British Medical Journal, London

1: 989-1036 (May 7) 1938

Clinical Bearings of Parathyroids. W. J. E. Jessop.—p. 989.

*Laboratory and Clinical Investigations on Tuberculin Purified Protein Derivative (P. P. D.) and Old Tuberculin (O. T.). A. T. Doig, G. Gemmill, G. G. Kayne, F. V. Linggood, H. J. Parish and J. S. Westwater.—p. 992.

Causes of Hemorrhage from the Rectum. J. P. Lockhart-Mummery.—p. 997.

Observations on Dysenteric Conditions Among Europeans of Calcutta. B. P. Tribedi and M. N. De.—p. 1000.

*Prevention of Measles in a Children's Hospital. W. E. Crosbie.—p. 1003.

Investigations on Tuberculins.—Doig and his collaborators compare the potency and stability of the purified protein derivative of tuberculin and of "dried dilutions" of the derivative with that of old tuberculin in a series of laboratory and clinical investigations. The purified protein derivative is the most suitable reagent for the Mantoux test. It is almost invariably of constant potency on a weight basis, is stable in the dry state and is of a nonsensitizing nature. It is therefore particularly suitable for use in widespread surveys in which uniformity in the amount of the active principle injected is essential. Dried dilutions are likewise of stable and of uniform potency and can be prepared from purified protein derivative. The dried dilutions may be redissolved easily and quickly in a suitable borate buffer solution immediately before use. A series of "dried dilutions" of purified protein derivative has been compared with corresponding dilutions of international standard old tuberculin by means of the Mantoux test, titrated previously on sensitive guinea pigs. The preparations (on intracutaneous test) were almost equal in potency; only the most sensitive guinea pigs indicated that the "dried dilutions" were slightly stronger. The reactions obtained with purified protein derivative were similar in character to the response with old tuberculin both in guinea pigs and in human subjects. Clinical comparison, by measurement and the relative number of positive and negative reactions, indicated that the purified protein derivative was slightly more potent than the old tuberculin. The results suggest that if the Mantoux test were to be used as a method of comparing the potency of two tuberculins it would be necessary to have observations on a large number of patients before any conclusion could be drawn. There would appear to be no advantage in using human subjects instead of guinea pigs for the titration of old tuberculin. The deterioration of dilutions of old tuberculin in phenol saline is not sufficient to prevent their use for Mantoux tests if they have been kept up to six weeks at room temperature or nine weeks in the ice box. "Dried dilutions" of purified protein derivative are much more stable and have shown no detectable loss in potency after three years at room temperature.

Prevention of Measles.—The occurrence of measles in a children's ward can best be prevented by the system of nursing children in cubicles. In the absence of cubicles the only measures available are the passive immunization of contacts by serum from patients convalescing from measles, serum from adults who have had measles, immune globulin and whole blood. Crosbie avers that during the past winter a considerable number of cases of measles arose in the wards of Alder Hey and Olive

Mount hospitals, with the result that it was necessary to immunize many contacts. The substances used for the purpose were serum from adults who have had measles and immune globulin from placental extract in varying doses. All susceptible contacts (289) were given an immunizing dose as soon as a case of measles was diagnosed in the ward. The best results were obtained from the use of 15 cc. of adult human serum or 10 cc. of immune globulin. Smaller doses of immune globulin did not give the same degree of protection, and of the forty-eight children receiving 4 cc. twelve did not obtain sufficient immunity to modify the course of the disease. However, no complications or sequelae occurred in these twelve children. Passive immunization against measles prolongs the period of incubation. One should wait for at least twenty-one days before admitting other susceptible children into the ward. A child may not be protected against measles even if he has been immunized from twelve to fourteen days previous to exposure to infection. The dosage of human serum or immune globulin should not be influenced by age. Children between 1 and 5 years of age require a full immunizing dose. In hospital practice droplet infection is not the sole means by which the infective material is carried from one patient to another; the nurses' hands may also be an important medium of conveyance.

Edinburgh Medical Journal

45: 309-372 (May) 1938

Medical Practice of the Future. J. Purves-Stewart.—p. 309.
Clinical Recollections and Reflections: XXIV. The Psychologic Problem of Venereal Disease. R. C. L. Batchelor.—p. 321.
The Lung and Pleura: Certain Anatomic Facts in Relation to Disease. A. F. Hewat.—p. 326.

*Nasal Sinusitis and Mental Disorder: Survey of 818 Cases. A. B. Smith and C. M. Ross.—p. 343.

Benign Intrathoracic Tumors: Notes on Two Cases. E. Bloch.—p. 357.
The Milk Supply. A. S. M. Macgregor.—p. 363.

Nasal Sinusitis and Mental Disorder.—Smith and Ross examined the nose, throat and ears of 818 mentally ill patients at the Royal Edinburgh Hospital. These patients were not selected; only those who were unable to be transferred to the examination room were omitted. Twenty-three showed no symptoms or signs of nasal sinus disease, but because of their mental or physical condition transillumination or x-ray examination was not carried out. Of the 795 remaining patients sixty-three, or 7.9 per cent, showed definite evidence of nasal sinusitis, 624 could be definitely regarded as being free from sinus disease, while in the remaining 108 patients, or 13.6 per cent, the presence of nasal sinus disease was indeterminate. These 108 patients showed opacity of one or more sinuses on transillumination. In all, ninety-three x-ray examinations were conducted, and of these sixty-five, or 69.9 per cent, revealed no sinus infection while twenty-eight, or 30.1 per cent, revealed definite sinusitis. It is thus probable that, had x-ray examination been carried out in the 108 indeterminate cases, thirty-two would have shown evidence of nasal sinusitis. On this assessment it may be estimated that of 795 patients with a mental disorder, ninety-five, or 11.9 per cent, had nasal sinusitis. Only one of sixteen patients with sinusitis operated on showed any improvement in the mental state. This improvement was of only a temporary nature. Since there is no evidence that infection of the nasal sinuses plays any fundamental part in the causation of the vast majority of cases of mental disorder, these patients should be spared the needless suffering attending surgical intervention.

Chinese Medical Journal, Peiping

53: 313-412 (April) 1938

Past and Present Trends in Medical History of China. L. T. Wu.—p. 313.

Some of Dr. Hobson's Medical Works in the Chinese Language. C. S. Yang.—p. 323.

Men of Note in History of Leprosy of the East. L. S. Huijers.—p. 335.

Dietary Principles in Ancient Chinese Medicine. H. C. Hou.—p. 347.
Chinese Materia Medica: Review of Some of the Work of the Last Decade. B. E. Read.—p. 353.

Posology of Chinese Drugs. F. P. Yueh; translated by K. L. Clatter.—p. 363.

History of Chinese Spectacles. C. P. Rakusen.—p. 379.

Archives des Maladies du Cœur, Paris

31: 477-568 (May) 1938

- *Respiratory Variations of Cardiac Systole and Arterial Pressure. E. Rist.—p. 477.
Parasystoles with Slow Rhythm and Mechanism of Rhythmic Extrasystoles. E. Doumer.—p. 491.
Electrocardiogram of Human Fetus. M. P. Marcel and J. P. Exchaquet.—p. 504.
Annular Peristaltic Systole. R. Lutembacher.—p. 513.
Auricular Tremulation and Bradycardia by Complete Auriculoventricular Dissociation. C. Lian and J.-J. Welti.—p. 518.
Electrocardiographic Changes Observed in Man Dead from Cold. W. Tomaszewski.—p. 525.

Respiratory Variations of Cardiac Systole.—Rist calls attention to kymographic studies on the respiratory variations of the cardiac pulsations during normal and pathologic conditions, which were carried out by Bascourret and Fischgold. These authors were able to register graphically what they term the increase of the pulsatility of the heart in expiration, a phenomenon which before could be estimated only by roentgenoscopy. Rist, after calling attention to some of his own earlier studies on this problem, points out that two distinct phenomena have often been confused—on the one hand, respiratory arrhythmia, which consists in an inspiratory acceleration of the cardiac rhythm, on the other hand the inspiratory weakening of the pulse, which is known as the paradoxical pulse of Kussmaul. The inspiratory weakening of the pulse, a phenomenon which is entirely different from its retardation, corresponds to an inspiratory reduction of the blood pressure. The author cites several examples of the confusion between the notion of retardation and that of weakening of the pulse. Some think that the arterial pressure decreases during inspiration and increases during expiration, while others maintain that quiet natural inspiration is generally accompanied by an elevation and the expiration by a reduction of the blood pressure; in artificial respiration exactly the opposite is the case. The thought that arterial pressure increases progressively from the beginning to the end of inspiration and decreases progressively from the beginning to the end of expiration is probably why Kussmaul saw in the inspiratory weakening of the pulse a paradoxical phenomenon. The author directs attention to the interminable conflict between two antagonistic factors: the action of the inspiratory muscles on the one hand and the elasticity of the lung on the other hand. The elastic traction of the lung increases with inspiration and diminishes with expiration. The result is that the amplitude of the heart beat diminishes with inspiration. This is not a question of diminution of the cardiac pulsatility, as has been stated, but it is rather the elastic resistance opposed to the cardiac contraction by the distended lungs, which grows with the inspiration. It results also in a lesser energy of the systole at the time of inspiration and consequently a diminution of the arterial pressure. But it is not obligatory and if the inspiratory distention of the elastic lung controls the systole it reduces also the energy of the traction from within outward which is exercised by the inspiratory musculature. The author shows further what happens if the lung is transformed into a nonelastic organ or when the contact between the heart and the lung is interrupted by the interposition of air, as is the case in pneumothorax. In this case the amplitude of the cardiac beat is considerably augmented and does not vary according to the phases of the respiratory activity. The author thinks that it will be highly instructive to register by means of the kymograph the various aspects of the action exerted on the heart by the respiratory function.

Presse Médicale, Paris

46: 865-880 (June 1) 1938

- Instability of Vagospastic System and the Interventions on Sympathetic System in Course of Pulmonary Tuberculosis. L. Michon, J. Chaize and H. Mollard.—p. 865.
Existence of Aerophagy. G. Leven.—p. 868.
*Reflexotherapy of Neurotonic Reactions. L. Alquier.—p. 869.

Reflexotherapy of Neurotonic Reactions.—Alquier points out that the volume and the consistency of the flesh depends not only on the anatomic conditions (musculature, adipose tissues, blood, lymph and exudates) but also on the play

of what Laubry terms "neurotonic reactions." The manual excitation of these reactions produces a true reflexotherapy. The author differentiates three types of neurotonic reactions: 1. The massage of the muscles, the stimulation of their insertions or of the para-articular tissues, which increases the muscular tonus and contractility. The arrest of the hypertonic conditions (excessive fatigue, cramps, contractures even with retractions, rigidity) is obtained by pinching the skin in a manner to provoke expansion of the interstitial tissues. 2. The vasomotoricity is nearly always locally regulable at will. Perpendicular pressure on the axis of an artery, stretching in the direction of the arterial current, augments the output and the pulsatility of the vessel. 3. The bringing into suitable tension by stretching or by manipulation with supple hands relaxes the rigidities. This relaxation affects not only the musculature but also the interstitial tissues. The author studied the retractility of the tissues for twenty years. He also thoroughly investigated the technic and results of reflexotherapy. He emphasizes that it is necessary to find the reflexogenic points which control the reactions. At these points the massage with rigid fingers or pressing maneuvers provoke an irritative spasmodic retraction; stretchings or a mild effleurage realizes a relaxation. The author further discusses the acute and chronic changes in retractility of the tissues and how they are counteracted by the reflexotherapy. He regards the relaxation of the hypertonic conditions of the muscles as the main objective of reflexotherapy. Congestion dominates the clinical picture at the onset of the acute infections. To counteract this congestion is the essential factor. However, a definite result can be obtained only by adjustment of the neurotonic retractility, suppressing the reflexogenic points and reestablishing the normal course of the lymph in the lacunar system and in the lymphatic drainage passages. The neurotonic retractility of the tissues varies according to the vagosympathetic excitability and the nature of the exudates. The technic of the reflexotherapy must be adapted to the neurohumoral conditions existing in the individual case. Soothing of the reflexogenic points and the clearing up of the lymphatic engorgements require the methodical application or reflexotherapy. The hands provoke the reactions and modify the excitation according to the response of the reflexes. The manual reflexotherapy is completed by various means: by deep kneading, by massage with beaters or chains and in some cases by mechanical vibrations. Further the author mentions thermophototherapy and various types of electrical treatments.

Monatsschrift für Psychiatrie und Neurologie, Basel

99: 1-560 (April) 1938. Partial Index

- Epilepsy in Hydrocephalus. E. Fünfgeld.—p. 1.
Late Form of Amaurotic Idiocy with Aspects of Paralysis Agitans. J. Hallervorden.—p. 74.
Syndromes of Thalamus and Subthalamus and Disturbances of Thalamie Nuclei. K. Kleist and J. Gonzalo.—p. 87.
Status and Development of Knowledge About Intracranial Pressure. F. Sauerbruch.—p. 192.
Olfactory Disturbances and Horner's Syndrome After Traumas of the Head. E. Stier.—p. 201.
Early Diagnosis of Tumor of Auditory Nerve. K. Vogel.—p. 227.
*Demonstration of Tumor Cells in Cerebrospinal Fluid. H. G. Creutzfeldt and R. Riebler.—p. 488.

Tumor Cells in Cerebrospinal Fluid.—Of specimens of cerebrospinal fluid which had been obtained by lumbar puncture and which had been examined by Alzheimer's method, Creutzfeldt and Riebler selected those of nineteen cases in which the diagnosis had been based on the presence of tumor cells in the fluid and in which the correctness of the diagnosis had been established by biopsy or necropsy. In these cases they compared the results of Alzheimer's method of embedding and sectioning with those of Forster's simple drop or smear method. In the nineteen fluids obtained by lumbar puncture, Alzheimer's embedding method disclosed the presence of blastoma cells sixteen times, whereas Forster's drop or smear method revealed such cells only six times. The tests were made also on three specimens of fluid obtained by ventricular puncture and on five specimens obtained by the puncture of cysts in cases of tumor. In these specimens it was again possible to demonstrate the superiority of Alzheimer's method over the dry method.

Monatsschrift f. Geburtshülfe u. Gynäkologie, Basel

107: 257-380 (April) 1938. Partial Index

- *Experiences with Hormone Pregnancy Reaction According to Aschheim-Zondek and Friedman-Lapham. A. Mekler.—p. 257.
Causes of Third Degree Tears of Perineum and Efforts to Prevent Them. L. Végh.—p. 296.
Experimental Examination of Etiology and Nature of Cystoectocoele. R. Börner.—p. 304.
Rupture of Symphysis During Delivery. K. Kimmig.—p. 328.

Hormone Pregnancy Reactions.—Mekler's report is based on 1,360 hormone pregnancy reactions that were carried out at the women's clinic of the University of Zurich in the years 1930 to 1935 inclusive. In 676 cases the mouse test of Aschheim-Zondek was used and in 684 the rabbit test of Friedman-Lapham. It was found that the reliability of the mouse test was 96.6 per cent, that of the rabbit test 93.1 per cent. If the doubtful reactions are disregarded, the figures are 97.8 and 97.4 per cent, respectively. The reaction gives positive results a few days after the first missed menstruation and produces reliable results as early as eight days after the first menstrual omission. In cases of abortion and extra-uterine pregnancy, it was observed that the disappearance of the positive reaction is dependent on the clinical symptoms. The more severe the clinical symptoms of the abortion or the extra-uterine pregnancy, the sooner does the reaction become negative; however, the more subdued the clinical aspects, the longer does the positive reaction persist. The three degrees of the anterior pituitary hormone reaction as distinguished by Aschheim and Zondek are: reaction I, the presence of large, ripe follicles with extensive cavity formation; reaction II, the presence of blood-filled, ripe follicles, blood dots; and reaction III, the presence of corpora lutea, which enclose the ovum, corpora lutea atretica. Discussing the ovarian reaction I in the mouse method, Mekler says that Zondek and Aschheim demanded reaction II or III for a definite diagnosis of pregnancy, because they observed reaction I also in some cases in which pregnancy was absent. Mekler thinks that during the early period of pregnancy reaction I may be taken as an indication of pregnancy in a woman with normal genitalia and when tumor, severe endocrine disturbances and the preclimacteric can be ruled out. In extra-uterine pregnancy reaction I is of such frequent occurrence that together with the clinical aspects it is of considerable diagnostic value. Reaction I is to be regarded as an intermediate reaction in case of transition from negative to positive (early pregnancy) and from positive to negative (abortion, dead fetus, extra-uterine pregnancy). In the rabbit method, however, the rupture of the follicle does not have the significance of a transitional reaction, because in rabbits a spontaneous rupture of the follicle is possible. A comparison of the mouse test and of the rabbit test suggests that it is best to use both types of animals for the diagnosis of pregnancy: in the earliest stages of pregnancy and in the observation of the disappearing symptoms of pregnancy the mouse test is better, because reaction I can be utilized; however, for greater rapidity of the diagnosis of pregnancy the rabbit test is advisable.

Pediatrics, Naples

46: 381-476 (May 1) 1938

- Indications and Results of Tonsillectomy: Study Based on Observation of 418 Children After Adenotonsillectomy. F. Tecilazic.—p. 381.
*Encephalographic Aspects of Epilepsy in Children. R. Ruggeri.—p. 397.
Problems of Specific Treatment of Tuberculosis. L. Franzl.—p. 422.
Pigmented Urticaria in Girl with Chronic Erythroleukemic Myelosis of Cooley's Type. I. Gatto.—p. 429.
Tracheobronchial Adenopathy with Stenosis of Trachea and of Right Bronchus: Death from Asphyxia. C. Gabriele.—p. 452.

Encephalographic Aspects of Epilepsy.—Ruggeri made encephalograms of fifty-nine children and two adults with epilepsy. He found that the most frequent alteration shown by the encephalogram is the enlargement of the ventricles alone or combined with dilatation or lack of filling of the subarachnoid spaces. The encephalogram in hemiparesis showed bilateral asymmetric enlargement of the lateral ventricles, displacement of the ventricular system over the less affected side and alterations of the subarachnoid spaces. In bilateral hypertonia with pyramidal symptoms and in epileptic dementia it showed great bilateral enlargement of the lateral ventricles and alterations or

absence of the subarachnoid spaces. The lateral and third ventricles were enlarged in epilepsy with changes of the character and in pyknopsy. In a case of grave amblyopia the occipital poles of the lateral ventricles were greatly enlarged. In two cases of grave familial amblyopia in adults there was diffuse cortical atrophy. In the author's group, twenty patients were intellectually normal. The encephalogram was normal in eight. It showed alterations of the type of hemiparesis in four, diffuse cortical atrophy, especially in the parieto-occipital zone, in two, atrophy of the vertex in one and ventricular dilatation in five. There were seventeen cases of idiocy. In eleven of these cases there was great enlargement of the ventricles, in four of which there was also cortical atrophy. In one case of microcephalus and one of congenital syphilis the subarachnoid spaces were insufficient and the right ventricle was deformed. The encephalogram was normal in two cases of tuberculous sclerosis. It showed asymmetric enlargement of the lateral ventricles, one of which was greatly deformed. In an epileptic idiot the air failed to enter the ventricles and the subarachnoid spaces. The author found no relation between the frequency and the intensity of the attacks and the aspect of the encephalogram. As a rule the encephalograms which show great changes are of patients with extreme mental derangement. The patients with encephalograms which show slight or no pathologic changes react well to the sedative treatment (barbital or bromide), especially if given without interruption, even with small doses. The author concludes that encephalography is of value in the etiologic diagnosis of epilepsy and as a guide for determining the type (sedative, medical or surgical) of the treatment.

Rivista di Patologia e Clin. d. Tuberculosis, Bologna

12: 289-368 (May 31) 1938

- *Clinical and Statistical Study of Children Vaccinated with BCG and Maragliano Vaccines from 1932 to 1934 and of Nonvaccinated Children. Raffaella Faggioli.—p. 289.
Sedimentation Speed of Erythrocytes in Pulmonary Tuberculosis. O. Parenti.—p. 311.
Fibrothorax and Relative Insufficiency of Pulmonary Valve: Case. Nicola Cavarozzi.—p. 336.
Pathogenesis of Pleurisy in Course of Artificial Pneumothorax. D. Giacquinto.—p. 343.

Vaccination for Tuberculosis.—Faggioli studied three groups of newborn infants: fifty-four were given the BCG vaccine, forty-six the Maragliano vaccine of killed tubercle bacilli and seventy-six were not vaccinated. The infants who received the BCG vaccine could not be isolated for the first six weeks following vaccination. Fifteen infants in the first group (those who received the BCG vaccine), ten in the second group (those who were given the Maragliano vaccine) and twenty-five in the third group (nonvaccinated infants) developed tuberculosis within the next three years. Four infants in the first group, three in the second and three in the third did not develop tuberculosis but were living in a contagious environment. Allergy developed within the fourth and ninth months of life in half of the tuberculous infants of the first and second groups, in four tuberculous infants who had not had any vaccine, in two of the four normal children in the BCG group who were living in a contagious environment, and in a normal infant who was also living in a contagious environment and had not been vaccinated. The effects of the vaccines on general and tuberculous mortality were verified in 395 infants also placed in three groups: 141 for the BCG, ninety-three for the Maragliano vaccine and 161 who did not receive any vaccines. Three infants in the BCG group and two in the control group died from tuberculosis. The author concludes that both the BCG and the Maragliano vaccines are harmless. Both vaccines diminished tuberculous morbidity and the rate of general morbidity. Tuberculous mortality does not take place in infants who had Maragliano vaccine. It is moderate in the group of nonvaccinated infants and greater in the BCG group if the children are not isolated after vaccination and the vaccine is administered only once. It is advisable to isolate the children in the pre-allergic phase, especially if they live in a contagious environment, to repeat the administration of BCG vaccine at the first

third, seventh and fifteenth years of life and to make frequent examinations of children for an early diagnosis and an early hygienic and medical treatment.

Archivos Argentinos de Pediatría, Buenos Aires

9: 217-328 (March) 1938. Partial Index

- *Acute Postinfectious Encephalitis in Children. A. Gareiso and P. O. Sageras.—p. 217.
Humoral Chemistry: Diagnosis and Treatment of Congenital Stenosis of Pylorus. J. P. Garrahan and C. Ruiz.—p. 237.
Prognosis and Treatment of Congenital Myxedema. J. C. Pellerano.—p. 245.
Treatment of Gonorrhea in Children. J. J. Reboiras.—p. 252.
Huge Tuberculous Cavity in Infant: Case. M. Acuña and A. C. Gambirassi.—p. 265.

Acute Encephalitis After Infections.—Gareiso and Sageras report forty-seven cases of acute encephalitis in infants and children. Fourteen of the cases were observed by the authors, and the others were from the Argentine literature. The disease develops with acute symptoms, the most frequent of which are convulsions, paralysis, sensorial disturbances and meningeal symptoms without changes of the cerebrospinal fluid. Acute encephalitis develops within two or three weeks in the course of whooping cough, in from four to six days in the course of measles, from one to three weeks in the course of diphtheria and either simultaneously with pneumonia, bronchopneumonia and influenza or in the course of these diseases. Acute encephalitis in whooping cough may develop with the common symptoms or with fever and mental torpor. Ataxia is frequently present. The disease is of long evolution with recurrences. The cerebral lesions are caused by the toxic and infectious effect of the virus. The rate of mortality is high. Acute encephalitis in measles may develop with the common symptoms or with coma and mental disorders. Ataxia is frequently present. Syphilitic neuropathic and alcoholic hereditary taints have an unfavorable effect on the evolution of the disease, which lasts from eight days to three months and leaves mental and motor sequels which are slowly controlled. The rate of mortality is low. Acute encephalitis in diphtheria is grave because of the nervous and cardiac disorders which it induces. Hemiplegia appears early and as a rule is permanent and complicated by athetosis or epilepsy. Acute encephalitis in pneumonia and bronchopneumonia is more frequent in infants than in older children. It may develop with the usual symptoms or with fever and mental disorders. Myocarditis and hemiplegia with contracture are the most common sequels. The disease lasts for a few days or for some months. The author calls special attention to encephalitis complicating influenza, two cases of which are reported. The patients suffered in early infancy from influenza complicated by acute suppurative otitis with mastoid edema in one case and by recurrent phlegmons of the hand and hip joint in the other. Epilepsy developed immediately in one patient and at the age of 5 in the other. The author states that the reflexes, in postinfluenzal encephalitis, may be normal or diminished in the absence of pyramidal symptoms or increased in the presence of symptoms. In the author's cases there were dystonia and hemiballism. The involuntary movements were of the choreic-athetosis type with tremors or hemiballism. The author concludes that encephalitis after influenza is uncommon. It carries a benign prognosis for life but the nervous sequels are permanent.

Frankfurter Zeitschrift für Pathologie, Munich

52: 1-162 (May 18) 1938. Partial Index

- Gastric Carcinomas with Structure Resembling Chorionepithelioma. K. Gaertner.—p. 1.
Statistics on Carcinoma in Young Persons. G. Gutmann.—p. 15.
Primitive Leiomyosarcoma of Prostate in Child with Diffuse Infiltration of Entire Wall of Bladder. S. Tovar and C. Vasilescu.—p. 41.
Frequent ("Epidemic") Occurrence of Tumors in Group of One Hundred Chickens. E. Ask-Upmark.—p. 51.
Multiple Sclerosis of Endocrine Glands. F. Meerwein.—p. 54.
Fatty Infiltration of Organs in Case of Oxygen Deficiency and Starvation. H. Ulrich.—p. 80.
*Histologic Examination of Hypothalamus in Ordinary Obesity, in Morgagni's and Günther's Syndromes and in Morbus Cushing. W. Ritter.—p. 149.

Histologic Examination of Hypothalamus in Obesity.—Ritter made microscopic studies on the hypothalamus and the adjoining regions in four different types of obesity: so-called

constitutional obesity, Morgagni's syndrome (endocraniosis hyperostotic with obesity and virilism), Günther's syndrome (cerebral polyglobulism) and Cushing's disease. The aim was to detect possible morphologic changes. Whereas the results of this examination were entirely negative, the hypophysis showed a severe basophilism in all four types of obesity. Moreover, examination of the adrenals disclosed a lipid hyperplasia of the adrenal cortex. Various reasons, which the author discusses, seem to indicate that the basophilism of the hypophysis is not the cause of the obesity but rather represents a compensatory process elicited by the disturbance in the equilibrium of the endocrine organs involved in the fat metabolism. In this connection the author points out that the formation of adenomas in the parathyroids in a number of bone diseases (rickets, osteitis deformans, osteomalacia) is likewise regarded as a secondary process, an adjustment to the changed conditions in the calcium metabolism. The changes, which were found in the anterior lobe of the hypophysis in all four types of obesity, corroborate the relations between the basophil cells of the hypophysis and the fat metabolism, to which attention had been called by E. J. Kraus.

Klinische Wochenschrift, Berlin

17: 689-720 (May 14) 1938. Partial Index

- Functions of Hypophysis. A. Jores.—p. 689.
Physiologic Experiments on Animals on Action of Hormones of Male Gonads. W. Schoeller and M. Gehrke.—p. 694.
*Does Physical Exertion Increase Predisposition to Poliomyelitis? Epidemiologic Observation. B. de Rudder and G. A. Petersen.—p. 699.
Influence of Irradiation with Ultraviolet Light on Antigen-Antibody Reaction of Skin (Cutaneous Test). G. Albus and F. Feldermann.—p. 702.
*What Influence Has Dextrose on Inoculation Malaria? W. de Pay.—p. 703.
Determination of Lipoid Phosphorus in Small Quantities of Blood. H. G. Krainick.—p. 706.

Physical Exertion and Poliomyelitis.—De Rudder and Petersen say that a connection between great physical exertion and the development of poliomyelitis (in times of epidemics) has been suggested repeatedly on the basis of occasional observations. Nevertheless, a real causal connection has heretofore been disputed. Observations in the course of a severe local epidemic of poliomyelitis in a boarding school for boys between the ages of 13 and 19, however, seem to prove such a connection. The increased predisposition to poliomyelitis following great physical exertion was demonstrated by the fact that the epidemic showed two waves of exacerbation, each of which appeared a few days after strenuous athletic contests. The author gives a detailed description of the etiologic details of the epidemic. To avoid misunderstandings, he emphasizes that there is of course not necessarily always an association between physical exertion and the development of the poliomyelitis, for in the described epidemic only some of the boys who were exposed to the same exertions developed poliomyelitis. The physical exertion is to be regarded merely as a factor increasing the predisposition to the poliomyelitis.

Influence of Dextrose on Inoculation Malaria.—De Pay describes a newly discovered action of dextrose in malariotherapy. At the author's clinic it was customary to give, as a prophylactic measure, to patients who were to undergo malariotherapy, but who had cardiac, vascular or severe hepatic and renal disorders, an intravenous injection of a 25 or 30 per cent solution of dextrose. It was observed that in the patients who had received the dextrose injections the malarial incubation period was much longer and autohemotherapy and other provocative measures were necessary to make the malariotherapy active. Moreover, in some patients, who already had had several malarial attacks and who were given injections of dextrose to support the heart action, the fever attacks ceased. In trying to find an explanation for this action of dextrose, the author discusses various possibilities. Among others, tests were made to determine whether dextrose acts only on the malarial fever or also on hyperthermias of different origins. These tests revealed that the action of dextrose on malaria cannot be regarded as nonspecific and symptomatic. Discussing the possible specific action of dextrose on malaria, the author cites the clinical histories of some of the forty cases of malario-

therapy in which attempts were made to arrest the attacks by dextrose. His theory of the mode of action of dextrose on malaria is that the concentrated dextrose solution changes the osmotic equilibrium in the blood, causes a shrinkage of some of the erythrocytes, and thus withdraws nutrient substances from the protozoa; the weakened protozoa are then acted on more effectively by the liver and spleen. Regarding the practical value of his investigations, he says that this action of dextrose on malaria is not to make the proved malarial remedies superfluous. However, he says that especially in weakened patients the use of dextrose is of great value because it makes possible a temporary arrest of the fever, prevents a further exacerbation of malarial anemia and further loss of hemoglobin and malarial pigmentation and thus makes it unnecessary to arrest the malarial therapy prematurely.

Münchener medizinische Wochenschrift, Munich

85: 777-816 (May 27) 1938. Partial Index

- *Breaking of Prostatic Ring. O. Franck.—p. 777.
 Medical Aspects of Problem of Suicide. G. Säker.—p. 782.
 Isolated Inflammation of Sublingual Gland by Plaud-Vincent's Infection. E. Bock.—p. 786.
 *Poisoning with Tea from Arnica Flowers. H. Schoenemann.—p. 787.
 Experiences on Treatment of Coli Infection of Urinary Passages by Means of Mandelic Acid. H. Kunstmann.—p. 790.

Breaking of Prostatic Ring.—Franck reviews the opinions about the genesis of hypertrophy of the prostate and suggests a new method of treatment, the breaking of the prostatic ring. After explaining how he arrived at this method of opening the prostatic ring, he cites some of the advantages of this method and explains the mechanism. The procedure is as follows: He first makes a suprapubic urinary fistula, because, no matter what the condition of the patient, this minor intervention is less trying and less dangerous than repeated attempts at catheterization. The suprapubic drainage effects within eight or ten days such an improvement in bladder, kidney and heart that then the breaking of the prostatic ring is possible. This intervention is made on all patients who have tolerated the suprapubic drainage; the latter is, to a certain extent, the touchstone for the practicability of a therapeutic intervention. Moreover, since the breaking of the prostatic ring is less serious and of shorter duration than the formation of the suprapubic fistula and since the patient's condition is better now than at the first intervention, neither age nor the condition of the heart or kidneys can be regarded as a contraindication to the operation. Discussing the technic, the author says that after a widening of the suprapubic fistula (so that the forefinger can be passed through) the anterior and the posterior poles of the ring of the prostate are pinched through. In each case the one blade of the crushing instrument is passed through the urethral slit, while the other blade grasps the pole of the prostatic ring together with its coverings. The pinch grooves are then separated by means of scissors. The author admits that the intervention is not always so simple; on the other hand, incomplete opening of the prostatic ring may occasionally be helpful in overcoming the stenotic effect of the prostate. It is explained and shown by illustrations that the sagittal cleft, referred to in prostatic surgery as the anterior and posterior commissures of the prostatic ring, are the sites best suited for the opening. The intervention, which requires only about two minutes, is completed with the introduction of a suprapubic catheter and the irrigation of the bladder. The catheter is left in place until the urine is free from blood. The author describes the histories of eight cases, in which he performed this intervention. In the concluding summary he says that this method can be used in mild and severe cases and that it will probably produce the same permanent results as enucleation.

Poisoning with Tea from Arnica Flowers.—Schoenemann reports a case in which a man aged 30 was hospitalized with the diagnosis meningitis. The patient complained of severe headaches and abdominal pains. Consciousness was intermittently impaired. There was an aromatic odor to the breath, but this was not like acetone. The patient was fretful and then became apathic. The respiration was abnormal; the skin was dry and cool, and warmth had to be applied artificially. As the symptoms gradually subsided and the patient's condition

improved, he reported that on return from his work he had made himself some tea and taken it. Shortly after that he had had vomiting and an attack of diarrhoea. Then he had lost consciousness. To the question as to what type of tea he had taken he was unable to give a definite answer, for to him teas seemed to be all the same. When the six types of tea found in his home were shown to him, he pointed out the arnica flowers as the type he had taken. Poisoning with this type of tea is rare, since this tea is now employed almost exclusively for external use (washing of hair and so on) but not internally. Reviewing the older literature on arnica, the author points out that the flower as well as the root of arnica was in wide medical use 150 years ago. He cites quotations from older works, which, while recognizing the helpful effects of arnica in various disorders, also warn against careless use, because it may result in undesirable reactions.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia

78: 1025-1088 (May 3) 1938

- Nasopharyngeal Tumors. D. Den Hoed.—p. 1026.
 Endemic Scleroma in a Minahassa Village. H. A. P. C. Oomen and L. Kirschner.—p. 1032.
 *Sulfanilamide in Treatment of Trachoma. B. Lian.—p. 1058.
 Blood Groups Among Inhabitants of Nias. J. H. Maasland.—p. 1066.

Sulfanilamide in Trachoma.—Lian first describes two cases of trachoma that were refractory to all treatment and responded with temporary improvement to injections of a sulfanilamide preparation. Later another sulfanilamide preparation was given with good success by mouth. Favorable reports by another investigator on the effect of sulfanilamide in cases of trachoma induced the author to try the sulfanilamide medication on a larger material. He describes his observations on thirty patients with trachoma. In a table he indicates the doses given in each case and the effects obtained. With a few exceptions the case were of the severe type, with corneal complications, which resulted in photophobia. The conjunctivitis and the corneal complications responded especially well to the sulfanilamide treatment, and the photophobia and the continuous lacrimation usually were greatly lessened. However, as regards the effect on the conjunctivitis and the corneal complications the action of sulfanilamide is not specific for trachoma, because other forms of conjunctivitis and corneal lesions have also been known to react favorably to sulfanilamide. The corneal complications of trachoma that were favorably influenced by the sulfanilamide were pannus, keratitis and ulcer. Moreover, after these complications had once been counteracted by the sulfanilamide preparation they rarely recurred. The sulfanilamide acted favorably also on the conjunctivitis and on the diffuse thickening of the conjunctiva. The author reaches the conclusion that, although sulfanilamide alone will not cure trachoma, it is a valuable aid in combination with the mechanical methods.

Hospitalstidende, Copenhagen

81: 393-420 (April 26) 1938

- Focal Infection, Especially Stomatogenic: IX. Considerations on Causes and Nature of Diseases of Joints. E. Jarløv and O. Brinch.—p. 393.
 *Id.: X. Concluding Considerations and Practical Results. E. Jarløv and O. Brinch.—p. 403.
 After-Examination of "Psychopathic" Children. P. A. Schwalbe-Hansen.—p. 407.
 True Diaphragmatic Hernia with Greater Part of Large Intestine at Content. K. Kalbak.—p. 416.

Focal Infections.—Jarløv and Brinch assert that a causal connection between focal infection and diseases of the joints is highly probable. Their experiments concern chronic disturbances of the joints. They believe that a considerable part of the large number of persons with polyarthritis can be helped by the disclosure of the infection foci and radical treatment in the early stages before the polyarthritis has caused irreparable injuries and before active secondary foci have formed in the lymph nodes and other tissues. They maintain with Pemberton and others that thorough examination and treatment along these lines should be a fixed part of diagnosis and treatment in polyarthritis. Important problems, they say, still await solution, particularly the question as to how the activity of the focus is to be determined. Intensive cooperation of the focus is part of internists, stomatologists, otologists, roentgenologists, bacteriologists and pathologists.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 111, No. 4

COPYRIGHT, 1938, BY AMERICAN MEDICAL ASSOCIATION
CHICAGO, ILLINOIS

JULY 23, 1938

INDUSTRIAL MEDICINE OF TOMORROW

CHAIRMAN'S ADDRESS

ROBERT T. LEGGE, M.D.

BERKELEY, CALIF.

When medicine was superimposed on the employment relation in industry, it became a target for condemnation among the organized medical profession. Our medical societies took the stand that industrial medicine was contract or corporate medicine, and any physician or surgeon who became so engaged in this field suffered a stigma that was unjustifiable.

It is true that, in the past, poorly trained men unable to compete in general practice sought and accepted jobs as company doctors to do first aid and traumatic surgery, with the purpose of developing a practice among the worker and his family. Abuses due to exploitation, combined with poor and unscientific curative medicine, were practiced. For that matter such practices were not unknown in competitive medicine. All we have to do is to look back four decades in the practice of medicine and compare our training in the medical schools, good or bad, our hospitals with the hospitals of those days, the health officers of the counties and the empirical specialists of the period, for a telling and significant contrast.

As class A medical education advanced, with the imposition of a prescribed premedical university course, the tremendous discoveries in basic medical sciences, bedside clinical teaching and required internships, our medical graduates became the highly trained practitioners of the type now engaged in industry.

The methods of modern curative medicine inevitably developed the specialist, group medicine, the approved hospital and better organization of preventive medicine, so that today preventive medicine has been elevated to a preeminent place, having produced medical, sociologic and engineering scientists who are endeavoring to prevent the diseases curative medicine had previously relieved. As the result of research and clinical experience, much progress has been made in the science of nutrition, in health education, and in mental and industrial hygiene in the field of public health.

As progress continues, with new inventions and chemical and physical discoveries, there develops always a new order of conditions and new problems affecting human physiology, which must be met.

The modern well trained health officer whose essential vocation is in the realm of sanitation, vital statistics, epidemiology and all applied sciences in the field of public health cannot remain indifferent to those things which modern research in curative and preventive medicine is effectively discovering and producing. If rickets, for example, can be prevented by school nutrition, sunshine and open air classrooms, is not this his job?

Not a medical man in the world would openly advocate that the prevalence of typhoid or diphtheria should not be controlled because such procedure would reduce his income and practice, although such is really the case.

The profession must not be deluded into thinking that the educated layman is ignorant of medicine and public health. It took a member of the American Association for Labor Legislation to secure a federal legislative enactment to prohibit the manufacture of phosphorus matches—not the medical profession—to prevent phossy jaw among the workers. Likewise the workmen's compensation laws were created by laymen to promote better medical care for workers and to compensate them for their injuries and loss of wages. Their success was attained in spite of the opposition of the legal and medical professions. The passage of these laws in all the states of the Union resulted in the installation of safety measures and a consequent large reduction in accidents. The industrialists and the workers alike would not consider the repeal of these welfare measures, and neither would the medical profession. Wherever industrial medicine has been introduced in the modern factory, it has continued.

According to a recent paper, "In our industrial country, where 50,000,000 workers are gainfully engaged, it is only quite recently that the medical and public health authorities have taken an interest in occupational diseases. The tremendous advancement in knowledge of physical and synthetic chemistry in the past two decades has developed useful discoveries, which have brought about social and industrial changes almost revolutionary and have likewise produced a train of industrial and domestic hazards of corresponding significance. Every new process, improvement or discovery presents some new danger, so much so that today occupational hazards exist in four out of five trades." Forty years ago Osler's Practice of Medicine listed one occupational disease, lead poisoning, while today Cecil lists only ten.

The old-time factory doctor treated many symptoms, such as dyspnea, numbness, nausea or headache, as conditions arising from some functional or bacterial origin, while the modern well trained industrial physician recognizes that these are frequently the prodromal

signs of a toxic element due to environmental labor conditions in which a special chemical is used. These call for preventive measures, the substitution of non-toxic agents, removal of workers from the atmosphere, introduction of forced ventilation, and so on.

Industrial physicians recognized these early and late occupational diseases at their respective industries, and with the cooperation of chemists, engineers and the industrialists themselves, occupational diseases are being studied and controlled, while absenteeism and compensations are being minimized.

Some years ago the American Association of Industrial Physicians and Surgeons was organized, a group of men of great ability engaged in the important industries of the country. These observers visualized the idea that, to humanize industry, preventive medicine and safety were their main objectives. They had witnessed the disabling injuries and degenerative occupational diseases, and as a result a new era in plant sanitation, safety measures, better working conditions, health education and factory inspection was introduced.

We are indebted to these factory physicians for our knowledge of industrial accidents and diseases, developed through their scientific studies and observations. They promoted safety measures which reduced traumatic injuries two thirds and incidentally reduced unnecessary compensation and suffering, whereby both the employee and the employer profited. When traumatisms occurred they were seen at once and shock, hemorrhage and infection arrested, thereby preventing possible ankylosis, deformities and amputations and rendering hospitalization and the service of specialists unnecessary. This is preventive surgery. The modern industrialist, the man who pays the bills, knows that such an industrial service means lessened expense to himself, his employee and the community. Therefore it becomes necessary in the practice of curative medicine to have a well equipped health center, with laboratory and trained personnel, located at the plant, to care for immediate emergencies and minor illnesses, the ultimate purpose being to record symptoms and study the factors that produce them and to prevent occupational diseases and grave morbidity by treating cases early.

Careful physical examinations should be conducted at the time of employment, thus offering the physician a recorded health picture of the employee. Defects found should be noted and the applicant informed for correction by his physician. At this time the applicant should be placed on a job suited to his adaptability. One of the foremost benefits derived from an industrial clinic is due to the rule that employees report whenever any early symptoms appear, as these manifestations may be of definite industrial hazards, worthy of medical differentiation. Many diagnoses of characteristic occupational diseases are thus determined.

To illustrate this point: Dr. Gerhardt of the Dupont Company, where tetra-ethyl lead is manufactured, noted by close observation that those workers who had lost their appetite for breakfast or whose sleep was disturbed by dreams presented earlier signs of lead poisoning than those with the classic signs as described in the textbook, such as anemia, basophilia or the lead line.

When plant physicians can observe and treat such medical cases while in the early stages and before pathologic changes ensue, morbidity and mortality will be greatly curtailed.

Employers demand that the plant physician be able to differentiate definitely between compensable and non-compensable diseases. Certainly he must be more proficient in this field than the health officer or the general practitioner. And here again the question arises as to why our medical schools devote so little time to teaching and training in industrial medicine.

Every state board of health should have a division of industrial hygiene where the small plant employer and the medical profession can secure advice and information for the solution of perplexing problems.

We physicians in general practice should not be misled by the notion that toxic hazards responsible for many occupational diseases are primarily confined to industry. This chemical age has ventured into warfare, agriculture and the modern home as well. Thus the medical profession is obliged to think in terms of occupational disease due to some toxic agent, in considering every obscure medical case not the result of an infectious organism. Thus it is necessary, in examining every patient, to inquire what his occupation is and whether there is any toxic agent prevalent in his environment. My purpose in this digression is to encourage occupational disease diagnoses and reporting them to health boards so as to promote prevention and worthy claims for compensation.

For the past two decades the American Industrial Physicians and Surgeons, American Labor Association, the League of Nations programs, the United States Public Health Division of Industrial Hygiene, the National Safety Council, railroad surgeons and others, have advanced, by research and clinical studies, methods to detect and prevent industrial diseases. The number of traumatic injuries and burns have been greatly minimized by these studies. During this period of American industrial medicine, Harvard University instituted a graduate school in industrial hygiene, leading to a doctor's degree. Two able journals devoted to research and practical industrial medicine are published.

The American Public Health Association recognized many years ago that industrial hygiene and medicine was a public health activity of major importance. It organized a section in this field and established important committees on special hazards, which have contributed much research on industrial diseases, publishing several classic reports on toxic metals and solvents.

The American College of Surgeons in 1926 developed as one of its main activities a minimum standard for medical services in industry. To be included on the approved list a careful investigation of the plant is conducted, the requirements being that the plant support an organized medical service with competent physicians and consultants and an adequate health service with proper emergency facilities for physical examinations and efficient care for all industrial injuries and illnesses sustained while on duty. Practical plant sanitation and other health measures to benefit the employees are also required. The college demands a system of accurate and complete records of illnesses and injuries and that major cases be sent to approved hospitals. The American College of Surgeons maintains a section in industrial medicine at the annual clinical congress, which has promoted greatly improved methods in the treatment of fractures.

Last May the Midwest Conference on Occupational Diseases held a three day session in Detroit, and this year the eighth International Congress on Industrial

Diseases and Accidents convenes at Frankfort on the Main, emphasizing the importance of industrial medicine and hygiene in the world of industry.

The American Medical Association took a rather conservative or possibly badly advised attitude toward early recognition of the importance of industrial medicine. It was even late in developing a dual section for preventive medicine and public health, a section which now includes industrial medicine. At the meeting of the Association at Kansas City, a resolution was introduced in the House of Delegates calling attention to the increased recognition of the seriousness of diseases arising from conditions to which workers are exposed in certain occupations, and a request was made that the Board of Trustees enlarge its study of industrial diseases. The House of Delegates after conference with group industrial, medical and public health specialists recommended that a new Council on Industrial Health be organized and for that purpose selected nine men to serve as members. The Association, through its new Council on Industrial Health, now has its greatest opportunity to be a benefactor to American industrial medicine; to promote by research and uplift by education and mutual cooperation the humanizing of industry by preventive medicine. Its aim should be not only a whole hearted program in the study and prevention of occupational diseases but also to strengthen a loyal cooperative spirit to support medical practitioners who are so engaged. It must stimulate the consciousness of all industrialists to the need for the application of modern industrial medicine entailing the service of competent physicians and the development of standardized health services in which preventive medicine and surgery as they have been outlined in this address will be scientifically practiced.

The fear that industry desires to engage in so-called corporate medicine is shared by some; while it is true that the organization of medical protection in a plant contributes to the cost of the service by necessity, it also involves vital interests in the prevention of disease and avoidable accidents. The new Council on Health must not fail in the new order of medicine. It has the opportunity, with the greatest group of our population, the worker and the industrialist, to forestall a political form of medicine which the organized profession is not in sympathy with. It can, besides educating employers to the necessity of medical supervision of their plants, promote a standardized system of industrial medicine suitable for both small and great plants, stress ideal plans, and certificate such plants as conform to the requirements.

Our Association can do much by devising simple tests for the recognition of toxic substances and encouraging chemists to develop nonpoisonous substitutes. Knowledge of the early signs of occupational diseases should be increased by instituting in our medical curriculum a course in industrial hygiene and toxicology and by devoting special space in *THE JOURNAL* to industrial health problems. It can also do much to popularize the idea of how profitable to both employer and employee is the maintenance of an efficient health service in their plants in promoting efficiency and the reduction of absenteeism due to illness and accidents, and in the establishment of periodic physical examinations with scientific first aid medicine and surgery.

Industry and organized labor have pointed the way and will look to the American Medical Association to

cooperate in advancing industrial medicine and not to oppose it. Modernized ethics provides for the administration of minor curative and major preventive medicine so necessary to meet the just demands for the control of occupational diseases and accidents.

Some one has said "Preventive medicine dreams of a time when there shall be no unnecessary suffering and no premature deaths, when the welfare of the people shall replace greed and selfishness, and it dreams that all these things will be accomplished through the wisdom of man." Truly, these are the objectives.

University of California.

COMPLICATIONS FOLLOWING THE USE OF ERGOTAMINE TARTRATE

THEIR RELATION TO THE TREATMENT OF MIGRAINE HEADACHE

THEODORE J. C. VON STORCH, M.D.

Instructor in Neurology at the Harvard Medical School and Junior
Visiting Neurologist to the Boston City Hospital

BOSTON

In the past five years ergotamine tartrate¹ has been used by an increasing number of physicians as an effective means of aborting or terminating migraine headache. More than 300 cases have been reported in which its use has given prompt relief in approximately 90 per cent of the patients.² Many of these patients have continued to use ergotamine tartrate over long periods of time. Possible development of ergotism from such prolonged use has been a source of some concern. Accessory symptoms following the administration of ergotamine have occasionally alarmed practitioner and patient alike. Several recent reports of gangrene or death following the use of ergotamine tartrate in conditions other than migraine have tended to increase this anxiety. To date not a single case of gangrene following the use of ergotamine tartrate in migraine has been reported despite the fact that the literature contains references to more than 300 cases in which it has been used.

It is my purpose in this study to analyze all the original reports concerning untoward sequelae of ergotamine tartrate therapy and to present some observations and deductions based on five years' experience with the drug in the treatment of migraine headache.

LITERATURE

Since the isolation of ergotamine tartrate by Stoll³ in 1918, forty-two serious sequelae have been reported following its use.⁴ Twenty-three have occurred in

Dr. Maria Hoefler gave invaluable assistance in analyzing the German literature.

Aid was received from the Rockefeller and from the Josiah Macy Jr. Foundation.

From the Neurological Unit of the Boston City Hospital and the Department of Neurology of Harvard Medical School.

1. Ergotamine tartrate is prepared under the trade name of Gynergen by the Sandoz Chemical Works, Inc., who supplied the drug for this and other investigations.

2. (a) Lennox, W. G., and von Storch, T. J. C.: Experience with Ergotamine Tartrate in 120 Patients with Migraine, *J. A. M. A.* 105: 169 (July 20) 1935. (b) O'Sullivan, M. E.: Terminations of 1,000 Attacks of Migraine with Ergotamine Tartrate, *ibid.* 107: 1208 (Oct. 10) 1936. (c) von Storch, T. J. C.: The Migraine Syndrome: Comments on Its Diagnosis, Etiology and Treatment, *New England J. Med.* 217: 247 (Aug. 12) 1937.

3. Stoll, A.: *Verhandl. d. Schweizer Naturf.-Gesellsch.*, 1920, p. 190.
4. Several cases quoted as instances of ergotism following the use of ergotamine tartrate were found to be due to the use of whole ergot or some other ergot extract such as ergotinine (Lutier, A.: Acute Intoxication from Hypodermic Injection of Ergotamine, *Presse med.* 36: 1436 [Nov. 10] 1928).

gynecologic or obstetric cases,⁵ eleven in the treatment of thyrotoxicosis⁶ and eight in miscellaneous disorders.⁷ None have been reported in the treatment of migraine headache.

In 1921 Spiro,⁸ a toxicologist, maintained that ergotamine tartrate had not as yet been proved to produce gangrene in man. In 1929, in a more extensive study, he reaffirmed his previous view saying: "I have seen no cases in which I felt certain that the gangrene was clearly the result of ergotamine."⁹ He pointed out that ergot produces a dry gangrene and that those cases of gangrene attributed to ergotamine tartrate were moist. Ellerbroeck¹⁰ reported in the same vein as Spiro. None of his own patients were given ergotamine tartrate. Guggisberg¹¹ collected from the literature

ten cases of gangrene in which ergotamine tartrate had been used in the puerperium. He felt that since puerperal infections predispose to gangrene and often produce it without the aid of ergot, it was doubtful whether the ergotamine tartrate could be held responsible. The cases he presented were also reviewed in Saenger's article. Saenger¹² listed fourteen cases of gangrene following the use of ergotamine tartrate in the puerperium. Nine of these were septic, and in some other ergot derivatives were used as well as ergotamine tartrate. He felt that ergotamine tartrate was merely an additional malefactor in the production of gangrene.

The reports of these cases (including those given by Saenger but exclusive of Guggisberg's cases) have been reviewed and are presented in tabular form (table 1). Of the forty-two reported "accidents" following the use of ergotamine tartrate, twenty-three occurred in obstetric cases, eleven in cases of hyperthyroidism and eight in miscellaneous conditions. Of the total, miscellaneous signs and symptoms ranging from anginal attacks to "impending gangrene" developed in twenty cases, gangrene in twenty-one and death in eight. In eighteen cases overdosage was primarily at fault. In sixteen cases sepsis was a contributory and probably the causative factor; fifteen of these were obstetric cases, many of which were further complicated by overdosage. There were a relatively large number of accidents reported in the treatment of the thyrotoxicoses considering the small number of such cases in which the use of ergotamine tartrate has been reported. A few patients had coexisting hepatic or renal disease. Among the eight fatal cases, death was attributable to gross overdosage in one, to coexistent sepsis and obliterative vascular disease in two, to coexistent coronary disease in one and to ergotism and hepatic cirrhosis in one, and in three the cause was unknown, but autopsy failed to demonstrate any evidence of ergotism.

Analysis of the literature reveals that overdosage, sepsis, obliterative vascular disease and associated cardiovascular disease have played an important role in the production of the ill effects attributed to the use of ergotamine tartrate. Death occurred in only one case¹³ unassociated with any of these factors. In that case ergotamine tartrate had been administered into the uterine wall during a cesarean section. Gangrene followed by spontaneous recovery occurred in three cases.¹⁴ Two were considered to show signs of impending gangrene.¹⁵ In the remaining two cases symptoms merely developed which unduly alarmed the physician.¹⁶ Many patients appeared to have a preexisting vasospastic tendency. Despite the presence of significant predisposing factors in the majority of cases, there remain a few cases in which, from the reported evidence, ergotamine tartrate must be considered responsible for the ill effects that followed its use.

Since there are no figures available with regard to the number of cases in which ergotamine tartrate has been used without untoward sequelae, the percentage of such sequelae may be only roughly estimated. However, such an estimate must be attempted in order that the number of accidents reported does not assume an undue importance. Judging from the amount of ergotamine tartrate dispensed in recent years for use

5. These reports include:
Antoine, T.: Secalefrage und puerperale Gangrän, Arch. f. Gynäk. 139: 492, 1930.
Brandess, T.: Symmetrische Gangrän beider Füße bei febrilem Abort und gleichzeitiger Gynergendarreichung, Zentralbl. f. Gynäk. 52: 620 (March 10) 1928.
Caffier, P.: Kritische Beiträge zum Problem des Ergotismus gangrenosus: Eigene Beobachtungen und experimentelle Untersuchungen zur Mütterkornfrage auf Grund eines mit Metritis dissecans kombinierten im Wochenbett, Ztschr. f. Gynäk. 52: 356, 1925.
Carreras, F.: Un caso de ergotismo en el puerperio (intoxicación por la ergotamina), Rev. med. de Barcelona 1: 205, 1924.
Goldberger, Eugen.: Symmetrische Gangrän an den unteren Extremitäten nach Mutterkornmedikation, Zentralbl. f. Gynäk. 52: 1573 (June 23) 1928.
Heyer, E.: Symmetrische Gangrän beider Füße bei febrilem Abort und gleichzeitiger Gynergendarreichung, ibid. 51: 1718 (July 2) 1927.
Hoehne, E.: Klinische Erfahrungen mit modernen Wehenmitteln insbesondere mit Gynergen, Arch. f. Gynäk. 125: 356, 1925.
Kienlin, H.: Spontaneous Gangrene of Feet in Puerperium, with Bilateral Thrombophlebitis, Resulting from Administration of Gynergen, Monatsschr. f. Geburtsh. u. Gynäk. 52: 622 (March 10) 1928.
Lork, E. C.: Über die Gefahren der Gynergen-Behandlung, ibid. 50: 381, 1928.
Neumann, H. O.: Gefahren der Gynergen-Behandlung, ibid. 80: 381, 1928.
Oginz, P.: Ergotismus Gangrenosus, Am. J. Obst. & Gynec. 19: 657 (May) 1930.
Polano, J.: Eine Fall von Ergotismus gangrenosus der linken Hand, Monatsschr. f. Geburtsh. u. Gynäk. 79: 164, 1928.
Roch, M.: Ergotisme gangreneux, Presse méd. 45: 31 (Jan. 5) 1935.
Schmidt, O.: Gangrän an den Extremitäten nach normaler Entbindung, Tubergavidität und septischen Abort, Zentralbl. f. Gynäk. 52: 1950 (Aug. 4) 1928.
Siminovits, S.: Sitzung der Gynäk. Sektion der Ärzterevereins in Budapest vom 21. Mai 1928, Orvosok hetil., 1928, number 24.
Speiser, M.: Puerperale Uterusgangrän, Zentralbl. f. Gynäk. 52: 2458 (Sept. 22) 1928.
Spiegel, T.: Gynergen Poisoning; Case, ibid. 52: 2957 (Nov. 17) 1928.
Zimmerman, O.: Störung der Coronardurchblutung durch Ergotamin, Klin. Wchnschr. 14: 500 (April 6) 1935.
6. These reports include:
Labbe, M., Justin-Lescaçon, L., and Gouyen, J.: Accidents consécutifs au traitement de la maladie de Basedow par le tartrate d'ergotamine, Bull. et mém. Soc. méd. d. hôp. de Paris 53: 429 (April 1) 1929; L'angine de poitrine ergotaminique, Presse méd. 37: 1069 (Aug. 17) 1929.
Müller, K.: Zur Frage der Behandlung des Morbus Basedowii mit Ergotamin, München. med. Wchnschr. 80: 1784 (Nov. 10) 1933.
Panter, H.: Tabische Symptome nach Gynergen-Injektionen, Med. Klin. 22: 880 (June 4) 1926.
Platt, R.: Ueber die Behandlung des Morbus Basedow mit Ergotamin, Klin. Wchnschr. 9: 258 (Feb. 8) 1930.
Schönbauer, L.: Treatment of Exophthalmic Goiter with Ergotamine (Gynergen), Deutsche Ztschr. f. Chir. 198: 99, 1926.
Speck, W.: Gefahr des Mutterkornbrandes bei Anwendung von Gynergen (Sandoz) in der Basedow-Chirurgie, Med. Klin. 26: 1521 (Oct. 10) 1930.
Zorn, Dietrich: Gynergenschädigung und ihre Beseitigung durch Weichselbäder und Padutin, Deutsche med. Wchnschr. 57: 1978 (Nov. 20) 1931.
7. These reports include:
Baber, E. A., and Tietz, E. B.: The Effect of Ergotamine Tartrate on the Behavior of Psychotic Patients, J. Med. 17: 551 (Jan.) 1937.
Gould, S. E., Price, A. E., and Ginsberg, H. I.: Gangrene and Death Following Ergotamine Tartrate (Gynergen) Therapy, J. A. M. A. 106: 1631 (May 9) 1936.
Lichtman, S. S.: Therapeutic Response to Ergotamine Tartrate in Pruritus of Hepatic and Renal Origin, ibid. 97: 1463 (Nov. 14) 1931; Clinical Experience with Ergotamine Tartrate, ibid. 107: 148 (July 11) 1936.
Nielsen, L.: Erythromelalgia Following Attempted Suicide with Gynergen (Ergotamine Tartrate), München. med. Wchnschr. 75: 736 (April 27), 1038 (June 15) 1928.
Yater, W. M., and Cahill, J. A.: Bilateral Gangrene of Feet Due to Ergotamine Tartrate Used for Pruritus of Jaundice: Report of a Case Studied Arteriographically and Pathologically, J. A. M. A. 106: 1626 (May 9) 1936.
8. Spiro, K.: Ueber Ergotamin (Gynergen-Sandoz), Schweiz. med. Wchnschr. 2: 737 (Aug. 11) 1921.
9. Spiro, K.: Mutterkornpräparate und Gangrän, Med. Welt. 3: 41 (Jan. 12) 1929.
10. Ellerbroeck, N.: Puerperale Gangrän und Mutterkorngangrän, Zentralbl. f. Gynäk. 53: 1384 (June 1) 1929.
11. Guggisberg, H.: Beitrag zur Sekalffrage, Zentralbl. f. Gynäk. 53: 578 (March 9) 1929.

12. Saenger, H.: Ueber Puerperalgangrän bei septischen Zuständen 1921 Gynergenmedikation, Zentralbl. f. Gynäk. 53: 586 (March 9) 1929.

13. Kienlin.

14. Polano, Schmidt, Siminovits.

15. Platt, Lichtman.

16. Baber and Tietz, Lichtman.

TABLE 1.—Analysis of Literature Concerning Ill Effects Following Use of Ergotamine Tartrate

Reference	Manner of Use of Ergotamine					Contributory Factors							Results			Comment	
	Number of Cases	Mg. per Dose	Route	Rate per Day	Number Days Used	Total Dose, Mg.	Overdosage	Sepsis	Obliterative Vascular Disease	Cardiovascular Disease	Vasomotor Disorder	Hepatic Malfunction	Renal Malfunction	Miscellaneous	Gangrene		Death
Antoine ⁵	1	0.25	SC	Once	..	....	..	..	..	..	..	..	..	..	D	+	Thrombophlebitis of both legs, renal veins and vena cava before treatment; death apparently due to pre-existing complications; endometritis Syphilis and arsenical treatment; hypophysis injections as well; grossly septic
	1	1	PO	4x	12	54.2	+	+	+	..	..	..	+	..	D	+	
Brandess ⁵	1	0.5	SC	Once	..	....	..	..	..	..	..	..	..	..	..	..	Ergot infusions given in addition; periaxillary sympathectomy for gangrene with doubtful results Gross subcutaneous overdosage
	1	1	PO	2x	4	6.5	0	+	..	+	..	..	..	..	R	..	
Caffier ⁵	1	0.5	SC	1x	..	....	..	..	..	..	..	..	..	..	S	..	Ergot infusions given in addition; periaxillary sympathectomy for gangrene with doubtful results Gross subcutaneous overdosage
	1	1.2	PO	3x	21	71.5	+	+	..	..	..	..	..	..	S	..	
Carreras ⁵	1	0.5	SC	8x	7	26.5	+	+	..	..	..	..	+	..	D	+	Gross subcutaneous overdosage
Goldberger ⁵	1	0.5	SC	Once	..	....	..	..	..	..	..	..	..	..	..	..
	1	0.5	PO	3x	4	12.5	0	+	..	..	+	..	..	..	R	..	Postoperative death after intramural uterine injection of ergotamine. Previously thrombosed varicose veins
Heyer ⁵	1	0.5	SC	Once	..	....	..	..	..	..	..	..	..	..	..	..
	1	1	PO	3x	6	13.5	0	+	..	..	+	..	..	..	A	..	Anginal symptoms pretherapy
Hoebne ⁵	1	0.5	IU	Once	1	0.5	0	0	..	..	..	..	..	..	..	+
Kienlin ⁵	1	1	PO	3x	21	63	+	0	+	..	+	..	..	..	R	..	Anginal symptoms pretherapy
Lork ⁵	1	1	PO	3x	12	36	+	+	..	..	..	..	..	..	A	..	
	1	1	PO	3x	13	39	+	+	..	+	..	..	..	..	A	..	"Impending gangrene" i.e., pulseless feet with cyanosis, coldness and numbness
Neumann ⁵	1	0.5	SC	2x	6	..	..	..	..	..	..	..	..	..	..	..
	2	1	PO	3x	19	120	+	+	+	+	+	..	..	..	A	..	Numbness and cyanosis of feet "Impending gangrene"
	1	?	SC	?	3	2	0	0	..	..	+	..	..	..	..	..
	3	1	?	SC	?	3	0.75	0	+	..	..	..	..	..	..	..	Gross overdosage including excessive amounts of ergotoxin and fluid extract of ergot in addition to the ergotamine
	4	1	?	SC	?	4	2.5	0	+	..	..	..	..	..	..	..
Ogiaz ⁵	1	0.5	SC	8x	14	..	..	..	..	..	..	..	..	..	..	..	Pulmonary tuberculosis; had pituitary extract once also
	3	1	PO	3x	14	150	+	+	..	..	..	..	..	..	A	..	
Polano ⁵	1	1	PO	3x	5	15	0	0	..	..	..	..	..	..	R	..	Gangrene of uterus after operation which cut its arterial supply; plus fluid extract ergot (1/2x = once every 2 days) 1,000 cc. hemorrhage, thrombophlebitis and peritonitis before any treatment; varicose veins
Roeh ⁵	1	1	PO	3x	4	12	0	+	..	..	..	..	..	..	A	..	
Schmidt ⁵	1	0.5	SC	Once	..	....	..	..	..	..	..	..	..	..	..	..	Quoted by Saenger
	1	1	PO	3x	6	18.5	0	0	..	..	..	..	..	..	R	..	
Siminovits ⁵	1	1	PO	3x	4	12	0	0	..	..	..	..	..	..	?	..	Gangrene of uterus after operation which cut its arterial supply; plus fluid extract ergot (1/2x = once every 2 days) 1,000 cc. hemorrhage, thrombophlebitis and peritonitis before any treatment; varicose veins
Speiser ⁵	1	1	PO	3x	14	12	0	+	..	..	..	..	..	..	R	..	
	2	0.5	SC	Once	..	....	..	..	..	..	..	..	..	..	..	..	Cyanosis of hands and legs followed by "remittant coma" for 2 hours
Spiegel ⁵	1	1	PO	1/2x	10	11.5	0	+	+	..	..	..	..	..	D	+	
	2	0.5	SC	3x	1	6.5	+	0	..	..	..	..	..	+	..	..	Anginal attacks pretherapy; anginal death
Zimmerman ⁵	1	0.5	SC	Once	1	0.5	0	0	+	+	..	..	..	+	..	+
Obstet.-Gyn. total.....	23						9	15	5	4	5	0	2	5	17	5	
Labbe ⁶	1	0.5	SC	1x	3	1.5	+	0	..	+	+	..	..	+	..	..	Angina 3 hours after each dose and hemiplegia 3 days after last dose "Syncopeal" death; no evidence of ergotism at autopsy
	2	0.5	SC	Once	1	0.5	0	0	?	+	+	..	..	+	..	+
Müller ⁶	1	0.5	SC	8x	3	12	+	?	..	..	+	..	..	..	S	..	Temporary pseudotabes
Panter ⁶	1	0.5	SC	3x	3	4.5	+	0	..	..	+	..	..	..	..	..
Platt ⁶	1	0.25	SC	3x	?	3	0	0	..	..	+	..	..	..	..	..	"Impending gangrene"
Schönbauer ⁶	1	0.35	SC	2x	7	6	+	0	..	..	+	..	..	..	A	..	
Speck ⁶	2	1-6	PO	3x	12	93	+	0	..	..	+	..	..	..	..	..	"Impending gangrene"
Zimmerman ⁶	2	?	?	?	?	?	?	?	..	..	+	..	..	..	..	..
Zorn ⁶	1	0.5-3	PO	3x	8	15.5	0	0	..	..	+	..	..	..	..	..	Temporary auricular fibrillation "Impending gangrene"
	1	0.5-3	PO	3x	8	15.5	0	0	..	..	+	..	..	..	..	..
Thyroid total.....	11						6	0	0	2	11	0	0	9	2	1	
Baber ⁷	1	0.25	SC	2x	2	1	0	0	..	..	..	..	..	+	..	..	Psychotic patient went into "shock"
	2	1	SC	1x	2	2	+	?	..	?	..	..	..	+	..	+
Gould ⁷	1	0.25	SC	1x	4	1	0	+	+	+	..	+	+	..	D	+	Psychotic patient had pulmonary infarcts 3 days after treatment; no evidence of ergotism
Lichtman ⁷	2	?	PO	Few days	..	?	0	0	..	..	..	+	+	..	..	..
	1	?	PO	Few days	..	?	0	0	+	+	..	..	..	+	..	..	1. Simulated coronary occlusion; 2. Had impending gangrene
Nielsen ⁷	1	15	PO	Once	1	15	+	0	+	+	..	..	..	+	..	..
Yater ⁷	1	0.5	SC	3x	3	9.5	+	0	?	?	..	+	+	..	A	..	Had a brief attack of tachycardia Temporary erythromelalgia after an alcoholic suicidal attempt
	1	0.5	SC	3x	3	9.5	+	0	?	?	..	+	+	..	A	..	
Miscellaneous.....	8						3	1	2	2	0	4	2	6	2	2	
Total.....	42						18	16	7	8	16	4	4	20	21	8	

Under Route: SC indicates subcutaneous; PO, oral ingestion; IU, intra-uterine injection.

Under Rate per Day: "Once" means that the particular dose was given only once while 1x, 2x mean that the particular dose was given once a day, twice a day, and so on.

Under Gangrene: R indicates recovery without loss of appreciable tissue; S, spontaneous sequestration; A, amputation, and D, death following but not necessarily due to the gangrene.

in migraine headache, it is probable that at least several thousand patients have used it in this country alone. In the past twenty years ergotamine tartrate has been dispensed in enormous quantities for use in obstetrics, gynecology and treatment of the thyrotoxicoses. In total, these cases could conservatively be estimated to run into the hundreds of thousands over this period. Therefore, the percentage of accidents over twenty years must be considerably less than 0.01 per cent (1 in 10,000). None of these accidents have occurred in the treatment of migraine headache.

CLINICAL OBSERVATIONS

In the past five years 550 patients with a presenting complaint of recurrent headache have been investigated by my associates and myself.¹⁷ About 430 of these patients were suffering from migraine headache. The diagnoses were established on criteria previously presented.²⁰ All patients were suffering from recurrent headaches, and all presented at least two of the following three criteria: associated nausea and vomiting, visual symptoms, migraine headache in the immediate family. The group includes many of the so-called

TABLE 2.—*Relief of One or More Migraine Headaches by One or More Administrations of Ergotamine Tartrate in 189 Patients*

Route	Number of Cases					Per Cent Complete Relief
	Complete Relief	Incomplete Relief	No Relief	Made Worse	Total	
Intravenous.....	71	1	0	0	72	98.6
Intramuscular, subcutaneous..	80	6	1	2	89	89.8
Parenteral.....	151	7	1	2	161	93.7
Oral.....	20	6	2	0	28	71.4
Total.....	171	13	3	2	189	90.4

allergic, endocrine, gastrointestinal, hemicranial, menstrual, ocular and ophthalmic types and a few trigeminal and neuralgic varieties.

Of this group 189 unselected¹⁸ patients were treated by means of ergotamine tartrate. There were 159 females and thirty males. Regardless of type or presumed etiology 90.4 per cent of the patients were relieved of one or more attacks by one or more administrations of ergotamine tartrate. Therapeutic results are presented in table 2.

Many of these patients have now used ergotamine tartrate in varying amounts from one to five years. Not many have been as faithful in keeping adequate records. Twenty patients who have kept adequate records were selected for presentation. These patients are those who have consistently taken the largest doses over the longest periods of time. Table 3 presents the amounts of ergotamine tartrate administered to these patients.

In none of these twenty patients has ergotism developed. As yet, there has been no evidence of ergotism in any of the 189 patients treated with ergotamine tartrate. No cases have been reported by other physicians using the drug in the treatment of migraine headache, nor have the American distributors of ergotamine tartrate been notified of any ergotism following its use in migraine headache.¹⁹

A question of ergotism was raised in several of the cases. Repeated examination in these cases failed to reveal any evidence of acute or chronic ergotism and in all the use of the drug has been resumed without subsequent ill effect. In several of these, the suspected symptoms were discovered to have been present for several years before the use of ergotamine tartrate.

Although ergotism has not developed in these cases, accessory symptoms are frequent and occasionally disturbing. It is these symptoms which alarm the patient and physician. Some are identical with the symptoms of early ergotism. These require immediate investigation. A few suggest special sensitivity of certain organs or organ systems and may constitute warning of impending disaster. The majority are merely unpleasant concomitants.

Accessory symptoms associated with ergotamine tartrate therapy occur most frequently after its intravenous injection and less so after subcutaneous or intramuscular injection; they are infrequent when it is given sublingually and least frequent when it is orally ingested. Unfortunately, the degree and rapidity of relief from headache vary in the same order, being most complete and rapid after intravenous injection and least so after oral ingestion.

The most commonly observed accessory symptoms are, in order of their frequency, nausea, vomiting, numbness or tingling of the hands and/or feet, muscle pains and stiffness (usually of the upper leg). Fatigue in varying degree occurred in most patients. None of these are cause for alarm. Nausea and vomiting, if severe, may be relieved in most cases by simultaneous sublingual or parenteral administration of from $\frac{1}{150}$ to $\frac{1}{120}$ grain (0.4 to 0.5 mg.) of atropine sulfate. Numbness and tingling are at times due to the use of ergotamine tartrate; at other times they are a component of the migraine syndrome unrelated to the use of ergotamine tartrate. These symptoms constitute a warning only when they become prolonged, persistent or progressive. In such instances, it is wise to discontinue ergot therapy, examine the patient carefully and resume therapy with caution if the examination has revealed no evidence of impending ergotism. Muscle pains and stiffness are frequent symptoms. They may be relieved by intravenous injections of suitable calcium compounds²⁰ or more conveniently by massage and exercise. Lassitude and fatigue are not a source of much complaint except by those patients with associated neurones.

Other symptoms occur in not more than 2 per cent of patients after the use of ergotamine tartrate. These are choking sensations, globus, insomnia, restlessness, substernal oppression, precordial pain, femoral or brachial perivascular pain, and pain in varicose veins. Of these, substernal oppression and vascular pain are most frequent. Following reassurance, the first two symptoms do not usually reappear with subsequent injections. The insomnia may be relieved by sedation when necessary. On the other hand, substernal oppression or precordial pain contraindicates ergot therapy until coronary disease has been excluded. Treatment may then be cautiously resumed. No untoward results have followed its use in several cases presenting these symptoms. Vascular pain is not a contraindication to its use unless obliterative vascular disease is present. Ergotamine tartrate has been used without disaster by a few patients complaining of pain in varicose veins. Whether or not it may be continued safely is as yet undetermined.

17. The majority of the patients were seen in the Migraine Clinic of the Boston City Hospital or through the courtesy of Dr. William G. Lennox.

18. Predominantly psychogenic, abdominal and the doubtful ophthalmoplegic varieties were excluded from the present study.

19. Personal communication to the author.

There are many symptoms which on rare occasions follow the use of ergotamine tartrate. Many of these would appear to be psychogenic, as, for example, generalized numbness, coldness and "tightness," acute anxiety, and "swelled head." These symptoms have appeared in the more neurotic patients and usually do not reappear after reassurance. It is interesting that such symptoms may follow the use of ergotamine tartrate because it has been reported that this drug has been used to advantage in abolishing somewhat similar symptoms in psychotic patients.²⁰ Urticaria, itching and local or generalized edema have on rare occasions been observed to follow the administration of ergotamine tartrate. These symptoms raise the question of specific sensitivity, especially in the light of the favorable reports concerning its use in the relief of pruritus of

The significant symptoms are those indicating the development of ergotism (numbness, tingling, coldness, blanching or cyanosis of extremities), those suggesting coronary occlusion (precordial pain and oppression, pain or paresthesia of the entire arm), and those warning of vascular occlusion (vascular pains, cyanosis, blanching, peripheral pain and paresthesias). The persistent occurrence of such symptoms temporarily contraindicates the use of ergotamine tartrate. An examination should be made at once. If no evidence of organic pathologic condition is demonstrable, the treatment may be cautiously resumed.

SYMPTOMS AND SIGNS OF ERGOTISM

Because of the infrequent occurrence of ergotism following the use of ergotamine tartrate, its signs and

TABLE 3.—Amounts of Ergotamine Tartrate Administered to Twenty Migraine Patients from One to Five Years Without Development of Ergotism

Case Number	Age	Sex	Number of Years Treated	Number of Attacks per Month Each Year										Route	Mg. of Ergotamine Used Per Dose	Mg. of Ergotamine Used Per Month Each Year					Total
				Before Treatment			During Treatment									Per Month Each Year					
				3	2	1	1	2	3	4	5	5	1			2	3	4	5		
1	..	F	5	1	2	3	3	3	4	5	5	PO	9	27	27	36	45	45	2,100		
2*	38	M	5	6	7	8	8	8	8	8	..	IV, SC	0.5	4	4	4	4	..	....
3	52	F	5	?	1	2	3	4	4	5	5	PO	4	...	...	...	...	32	576
4†	..	F	5	2	2	3	3	3	3	2	2	SC	0.5	1.5	2	2	2.5	2.5	176		
5	40	F	5	4	4	4	3	3	2	2	2	SC	0.25	0.75	0.75	0.5	0.5	0.5	36		
6	64	F	5	1	1	1	1	1	1	1½	¾	SC	0.5	0.5	0.5	0.5	0.25	0.15	23		
7†	41	F	4	2	2	1	2	4	6	..	..	SC	0.5	1	2	3	...	...	..
8	35	F	4	2	2	3	4	4	4	4	..	SC	1	...	...	...	6	...	164
9	37	F	4	1	1	1	2	2	2	2	..	SC	0.4	1.6	1.6	1.6	1.6	...	77		
10	..	F	3	15	15	15	15	15	15	..	..	SC	0.5	1	1	1	1	...	43
11	36	F	3	4	5	6	10	18	..	..	..	SC	1	15	15	15	...	...	540
12‡	40	F	3	1	1½	2	3	4	5	..	..	SC	0.75	2.5	4.5	...	...	...	...
13	45	F	3	2	3	4	5	5	10	..	..	SC	0.5	...	...	10	...	...	240
14	..	M	3	1	1½	2	2	1½	1	..	..	SC	0.25	1.5	2	2.5	...	...	72
15	62	F	2	5	6	6	6	6	..	..	..	SC	0.25	1.25	1.25	2.5	...	...	60
16	..	F	2	7	5	5	4	4	..	..	..	PO	0.5	1	0.75	0.5	...	...	27
17†	38	F	2	4	4	4	4	4	..	..	..	PO	4	24	24	...	...	...	576
18	28	F	2	7	8	9	8	8	..	..	..	SC	1	4	4	...	...	...	96
19	..	F	2	2	2	2	2	..	..	..	..	SC	0.3	2.4	2.4	...	...	...	58
								2	..	..	..	SC	0.5	1	...	...	...	...	..
								2	..	..	..	SC	1	...	2	...	...	...	36
20§	43	F	2	4	6	8	8	8	?	..	..	SC	0.5	4	30	...	...	...	78

F = female, M = male.

PO = oral administration; IV = intravenous, and SC = subcutaneous injection.

* Patient 2, a surgeon, used 0.25 mg. intravenously and 0.25 mg. subcutaneously for each headache for four years but now uses 4 mg. by mouth.

† In these cases it was suspected that ergotism was developing but the patients showed no evidence of it on examination and have continued to use ergotamine tartrate without ill effects.

‡ Patient 12 at first used 0.5 mg. of ergotamine tartrate, now uses 0.25 mg. combined with 0.25 mg. of ergonovine (neo-gynargen). She always repeats each dose in twenty-four hours. Ergotamine tartrate alone is tabulated.

§ Patient 20, a psychoneurotic, has taken 0.5 mg. of ergotamine tartrate "almost every day" for the past three months against advice but without untoward sequelae.

renal or hepatic origin.²¹ Numbness in one arm may rarely occur. Two patients reported cyanosis and paresthesias of the face. Another complained of claw-hand twelve hours after oral administration of either 5 mg. of ergotamine tartrate or ergonovine. Mental dullness is a rare complaint. Even more rare are complaints of "stiffness" of the jaw, neck or feet.

It is difficult to ascribe all the symptoms following the use of ergotamine tartrate to specific action of the drug. Many are undoubtedly psychogenic. Another large group may be ascribed to vasospasm. Among the latter are numbness, tingling and coldness of the extremities and vascular pains. Nausea and vomiting are probably the result of a specific action of the drug. Lassitude, fatigue and dullness may be central effects. Edema and itching are possibly evidence of a sensitivity to the drug.

symptoms have not been clearly defined. The occurrence of ergotism following the use of ergotamine tartrate has always been determined by the symptoms that follow overingestion of whole ergot.²² There are in whole ergot other active constituents, such as histamine, which may mask or alter the toxic phenomena due solely to ergotamine tartrate. Nevertheless, although ergotamine tartrate may produce a type of ergotism different from whole ergot poisoning, familiarity with the latter is essential in estimation of the former.

Ingestion of excessive amounts of whole ergot may cause a gangrenous, a convulsive or a combined type of ergotism. The more common symptoms of gangrenous ergotism are general lassitude, mental dullness, vague lumbar pains, cramplike pains in the calves and dull burning pains in the extremities followed by intense

20. Baber and Tietz.⁷

21. Snell, A. M., and Keyes, H. C.: Pruritus of Jaundiced Patients: Its Incidence and Treatment, *M. Clin. North America* 16:1455 (May) 1933. Lichtman.⁷

22. (a) Barger, George: Ergot and Ergotism, London, Gurney & Jackson, 1931. (b) Gaysinovich, S.; Keniksborg, E., and Kogan, A.: Symptoms and Prophylaxis of Ergotism, *Vrach. delo* 17:433, 1934.

waves of heat or cold with numbness finally supervening. The signs consist of moderate vomiting, swollen or inflamed feet (rarely hands), a livid cold skin over the extremities with the appearance of red or violet vesicles and cyanosis later turning black. Jaundice often occurs. The extremities become pulseless and the gangrene is dry and bloodless until infection is superimposed. When infected, the gangrene becomes moist. The legs are especially affected, the hands rarely. Gangrene is equally frequent in males and females but is often less severe in the latter. In pregnant women whole ergot is reported to produce gangrene before it results in abortion.

Since convulsions do not invariably occur in "convulsive ergotism," it is suggested that "neurogenic ergotism" may be a better term. In this type the outstanding symptoms are fatigue, "heaviness of head and limb," "giddiness," insomnia, restlessness, excitement, deliriums, dementia, mania, impaired sight or hearing, pain and pressure in the chest, gastric pain, formication, "pins and needles," numbness and "hot and cold waves." Paresthesias usually occur in both hands and feet but may occasionally be unilateral. The signs include painful spasm of the face, throat or diaphragm; contractures of the hands; tonus, clonus and myoclonus; myopia or miosis, cataract; vomiting, diarrhea and amenorrhea. Pseudotabetic signs occasionally occur. Hemiplegias or paraplegias may also occur. Histologic examination of the tissues has revealed degeneration of the optic nerve and of the dorsal column and peripheral (lateral column) spinal cord. The cord changes simulate tabes dorsalis or more frequently the type of degeneration found in deficiency diseases. In fact, it has been suggested that "convulsive ergotism" is determined by a coexisting vitamin A deficiency. Many of the signs, symptoms and pathologic changes of convulsive ergotism may be due to malnutrition and to hypovitaminosis, since most of these cases have occurred in famine districts.

It has been reported that children are more susceptible to ergotism than adults. There have, however, been no reports of ergotism in children who have received ergotamine tartrate. No untoward reactions have occurred in children who have received it for migraine attacks.

If one compares the accessory symptoms which most frequently follow the use of ergotamine tartrate with the description of ergotism just given, it becomes apparent that the former are quite similar to the milder symptoms of convulsive ergotism. This suggests that the factor responsible for neurogenic or convulsive ergotism is concentrated in the ergotamine tartrate fraction of whole ergot. On the other hand, other ergot derivatives produce much the same symptomatology. Furthermore, ergotamine tartrate is capable of producing either type of ergotism in animals or man. It would therefore appear that ergotamine tartrate produces a type of ergotism as yet indistinguishable from that caused by whole ergot.

PATHOLOGY OF ERGOTISM

Experimental gangrene in animals and accidental gangrene in man caused by ergotamine tartrate are quite similar from the pathologic point of view.²³ The vascular alterations are of primary interest. In general there is an arterial vasospasm primarily affecting the

arterioles and smaller arteries, although the larger arteries may at times be constricted to a greater degree.²⁴ Associated with this vasoconstriction there are various degrees of intimal edema and hyperplasia, hyaline degeneration, thickening of the arterial walls, lymphocytic infiltration and frequent thromboses. The capillaries have been found to be dilated.²⁵ Venous vasoconstriction is not as marked as the arterial but is present in varying degrees. Thickening of the venous walls also occurs and thromboses are frequent.

Although Spiro⁹ maintained that ergotamine tartrate could not be considered to be a vasoconstrictor and Straub²⁶ claimed that gangrene due to it was the result of vasomotor paralysis, there is much recent evidence to the contrary. Unpublished observations in E. A. Carmichael's laboratory have shown that ergotamine tartrate acts as a vasoconstrictor on the sympathectomized blood vessels of the finger. Polák²⁷ has shown that gangrene is hastened by section of the abdominal sympathetic chains. Unpublished results (Carmichael) have suggested that it acts as a mild vasoconstrictor on the normal vessels of human skin. In fact, recent observations have indicated that its therapeutic effect in migraine headache is the result of vasoconstriction of the branches of the external carotid artery.²⁸ Experimental and pathologic evidence in animals and man has thus confirmed the impression that at least gangrenous ergotism due to ergotamine tartrate is a vasospastic obliterative process.

An uncomplicated gangrene due to ergot is a dry gangrene until sepsis supervenes. Many cases of puerperal gangrene have been reported with and without²⁹ ergot therapy. It is to be emphasized that these are usually moist and not clearly due to ergotamine tartrate.

Changes in the cord simulating those found in tabes dorsalis and the deficiency diseases have been reported in epidemics of ergotism.^{22a} The only change in the nervous system so far reported after ergotamine tartrate is vacuolization of the myelin sheaths of the peripheral nerves.²⁴

It has been reported that an attack of ergotism sensitizes subjects to subsequent ingestion of ergot. There is no evidence that this is true of ergotamine tartrate or that a tolerance toward ergotamine tartrate is developed after its prolonged use.

TREATMENT OF ERGOTISM

The various means of treating ergotism indicate that no really efficient method has yet been devised. Obviously, the first and most important part of any treatment is that the patient should avoid ergot in any form. Various vasodilators have been used, such as amyl nitrite, sodium nitrite, glyceryl trinitrate and scopolamine hydrobromide. Atropine sulfate has been recommended. Theophylline compounds have been used, usually with scopolamine hydrobromide. Daily intravenous injections of from 15 to 20 cc. of a 3 per cent solution of magnesium sulfate have been considered

24. Yater and Cahill.⁷

25. Gould, Price and Ginsberg.⁷

26. Straub, Walther: Das Mutterkorn im Wandel der Zeiten. München. med. Wchnschr. 81: 349 (March 9) 1934.

27. Polák, E.: Experiments on Ergotism, Časop. lékař. česk. 63: 1402 (Sept. 27) 1924.

28. Graham, J. R., and Wolff, H. G.: On the Mechanism of Migraine Headache and the Action of Ergotamine Tartrate, J. Clin. Investigation 16: 660 (July) 1937.

29. Wormser, E.: Ueber puerperale Gangrän der Extremitäten, Wien. klin. Rundschau. 18: 73, 1904. Stein, A.: Gangrene of the Extremities Following Gynecologic Operations and the Puerperium with Remarks on Embolotomy, Am. J. Obst. & Gynec. 9: 595 (May) 1923.

23. Gould, Price and Ginsberg.⁷ Yater and Cahill.⁷ Barger.²² Gay-sinovich, Kenigsberg and Kogan.²²

superior to the usual narcotics and bromides.^{22b} Barger^{22a} lists the use of from 5 to 25 cc. of 25 per cent magnesium sulfate intravenously. Intravenous dextrose may be used because of the hypoglycemia often present in ergotism. Chloroform, cardiac stimulants and emetics have been recommended when indicated. Because of the immunity in female rats to gangrene caused by ergotamine tartrate following the use of estrin³⁰ (theelin), intramuscular injections of estrin (theelin, amniotin, theelol, progynon and the like) might be tried in the milder cases occurring in women. Alternate hot and cold foot baths or alternate suction by means of a "vasculator" may be used for gangrene. As in many disorders, the best treatment for ergotism is prevention.

CONTRAINDICATIONS

Just why, sepsis should predispose to gangrene is not clear. In intravascular infection, such as thrombophlebitis, the relationship is more apparent. Several authors maintain that ergotamine tartrate is no more than a contributory agent to the production of gangrene in such cases. Others believe that it plays no role whatever in the production of gangrene in the septic puerperium. Nevertheless, because of the frequent presence of preexistent sepsis in those cases wherein gangrene has followed the use of ergotamine tartrate, infection must be considered a contraindication to the use of ergotamine tartrate in the treatment of migraine headache.

In order to prevent vascular occlusion and gangrene, ergotamine tartrate should not be used in the presence of Raynaud's or Buerger's disease, venous thromboses, syphilitic arteritis or marked atheromatous arterial disease, especially in cases presenting any degree of coronary occlusion. In several cases of essential hypertension, ergotamine tartrate has been used without disaster (case 12). It has also been safely used in several cases of arteriosclerosis and hypertension. Furthermore, there are reports concerning its use in Raynaud's disease.³¹ Experimental and pathologic evidence, however, indicates that, although capillaries may be dilated after overdoses of ergotamine tartrate, arteries and arterioles are constricted and obstructed. Therefore, because of experimental, pathologic and clinical reports concerning certain vasospastic and obliterative tendencies of ergotamine tartrate, it is considered unwise to use it in the presence of obliterative vascular disease, especially coronary occlusion.

Hepatic disease was present in four cases and renal malfunction in another four cases in which accidents followed the use of ergotamine tartrate. It may be that impairment of "hepatic detoxication" or renal elimination allows some potentially dangerous component of ergotamine tartrate to act in an unrestrained fashion. As jaundice often occurs in whole ergot poisoning, it is possible that ergotamine tartrate may produce further hepatic damage in these cases. On the other hand, at least ninety patients with demonstrable hepatic disease have been treated with ergotamine tartrate³² with only four accidents. In the treatment of migraine headache, administration of ergotamine tartrate has been avoided in patients with demonstrable hepatic or renal disease. It is recommended that ergotamine tartrate be used

cautiously, if at all, in the treatment of migraine headaches complicated by demonstrable hepatic or renal disease.

It has just been recommended that ergotamine be avoided in the treatment of migraine complicated by vasospastic and hepatic disease. Some authors maintain that migraine itself is a vasospastic disease, others that it is hepatic. How then can one use ergotamine in its treatment? No evidence for gross hepatic malfunction in migraine has been presented. There may be some barely detectable malfunction in a certain group of cases.³³ This does not constitute a contraindication to the use of ergotamine. As to vasospasm, no worthwhile evidence has been presented that vasospasm occurs in migraine to any degree. Certainly it is not the intracranial etiologic agent.^{3c}

Several instances of chemically demonstrable vitamin C deficiency have been observed in the present series of migraine patients. Accessory symptoms following the use of ergotamine tartrate appeared to be much more severe than in the remaining patients. Possibly the action of ergotamine tartrate on the vascular and nervous systems of these patients is enhanced by the preexisting pathologic changes due to the deficiency of vitamin C. The question is as yet unsettled.³⁴

A few patients may be hypersensitive to ergotamine tartrate. Such subjects give clinical evidence of extremely unstable vasomotor systems. In them marked and sometimes bizarre reactions occur following the use of ergotamine tartrate. Such conditions need hardly be listed as contraindications, since the patients almost invariably refuse further ergotamine tartrate. It is essential in such cases to be certain that these patients are not denied treatment because of purely psychogenic symptoms. Several cautious and well controlled trials of ergotamine tartrate are indicated.

Despite observations that it is difficult to produce abortion with ergotamine tartrate, pregnancy must be considered a contraindication to its use in migraine attacks. Fortunately, many women cease to have attacks after the first months of pregnancy.

DOSAGE

Overdosage appears to be responsible for most of the ill effects that follow the use of ergotamine tartrate. On the other hand, large doses have been used without ill effect. Lichtman⁷ has successfully used 1 mg. three times a day by mouth for twenty-eight days. Podolsky³⁵ has used the same dose for fifty-six days at a time. Baber and Tietz⁷ have used 6 mg. a day for fourteen days and Meakins and Scriver³⁶ have used up to 18 mg. a day for at least ten days. Brack³⁷ is reported to have used 1 mg. three times a day for six months. Almost every obstetrician has used as many as two 0.5 mg. injections in one day, and I have on rare occasions used two such injections in one day. Five years' experience with the drug, however, has suggested that smaller doses are sufficiently effective.

In the treatment of migraine attacks, it is recommended that the intravenous route be used only by those thoroughly familiar with the drug. When administered by the intravenous route no more than 0.25 mg.

33. McClure, C. W., and Huntsinger, M. E.: Studies in Fat Metabolism: 11. The Character of Blood Lipids in Hepatic Disorders Including Migraine. *Arch. Int. Med.* 43:715 (May) 1929.

34. Barger feels that vitamin A deficiency plays a definite part in the production of the neurogenic type of ergotism. Stoll has personally informed the author that a deficiency of vitamin C is apt to increase the accessory symptoms due to ergotamine tartrate.

35. Podolsky, E.: Migraine: New Therapeutic Approach, *West Virginia M. J.* 29:173 (April) 1933.

36. Merkins, J., and Scriver, W.: Treatment (Ergotamine, Acetylcholine, Sodium Thiocyanate) of Hypertension, *Canad. M. A. J.* 23:285 (Sept.) 1931.

37. Brack, W.: Significance of Alimentary Hemoclasia, *Ztschr. f. d. ges. exper. Med.* 51:525, 1926.

30. McGrath, E. J.: Experimental Peripheral Gangrene. *J. A. M. A.* 105:854 (Sept. 14) 1935; Experimental Peripheral Gangrene: Effect of Estrogenic Substance and Its Relation to Thrombo-Angiitis Obliterans, *Arch. Int. Med.* 65:942 (June) 1935.

31. Stahlke: Zur Frage der Sensibilität des Sympathikus, *München, med. Wchnsch.* 72:591 (April 2) 1926. Spiro.⁹

32. Lichtman, 7; Snell and Keyes.²¹

(0.5 cc.) is to be given at the initial trial. The maximum single intravenous dose is 0.5 mg. (1 cc.). No more than one such injection should be given in twenty-four hours, nor more than two such injections in any one week. Continuance should not be at a rate greater than 0.5 mg. (1 cc.) per week.

By way of the subcutaneous or intramuscular routes, the initial dosage may be increased to 0.5 mg. (1 cc.), but the remainder of the precautions suggested for intravenous therapy apply as well to these methods of administration. Rarely two 0.5 mg. injections may be necessary within twenty-four hours. Two injections a week have been used by a few healthy patients without untoward effects.

Sublingually the dosage is much larger. The average patient requires from 3 to 4 mg. (three to four tablets) at the onset of a headache with from 1 to 2 mg. (one to two tablets) per hour thereafter, if necessary, until not more than a total of 10 mg. has been absorbed. Such a procedure may be followed safely once a week and possibly twice a week, if under the immediate care of a physician.

The average oral dose for ingestion is from 4 to 5 mg. (four to five tablets) taken at once, followed by 2 mg. (two tablets) an hour, if necessary, until a total of 11 mg. has been taken. When more than 8 mg. is necessary for relief by either the sublingual or the oral route, it is best to substitute the subcutaneous injection of 0.5 mg. (1 cc.).

In the treatment of migraine headaches, it is essential that the drug be given as early in an attack as is possible, preferably during the prodromal stage. When given early, the amount necessary to produce relief is greatly decreased.

These precautions are considered to be entirely safe but practical. It should rarely be necessary to exceed such doses.

CONCLUSIONS

The reports of forty-two cases were found in the literature in which ill effects followed the use of ergotamine tartrate. The great majority of these occurred because of overdosage, preexisting sepsis or obliterative vascular disease. These cases are conservatively estimated at not more than 0.01 per cent of the total number of cases in which ergotamine tartrate was used. No accidents have been reported following its use in the migraine syndrome.

In five years' experience no serious complications have occurred in the treatment of 189 patients with migraine headache. Accessory symptoms are frequent after the administration of ergotamine tartrate. Usually they are merely annoyances; occasionally they constitute warnings of impending disaster.

Contraindications to the use of ergotamine tartrate are septic states, especially when associated with intravascular foci and obliterative vascular disease, especially when coronary.

Treatment should be continued with caution in the presence of marked arteriosclerosis, hepatic or renal disease, vitamin C deficiency and hypersensitivity to the drug.

Overdosage has been regrettably frequent in the use of ergotamine tartrate in the treatment of conditions other than migraine. When correctly administered in the absence of contraindications, ergotamine tartrate may be considered a safe and extremely valuable means of aborting or terminating migraine headaches.

THE FLUORINE CONTENT OF THE THYROID GLAND IN CASES OF HYPERTHYROIDISM

ROBERT JOHN EVANS, M.S.

AND

PAUL H. PHILLIPS, Ph.D.

MADISON, WIS.

Fluorine apparently has an influence on the thyroid, but there is no agreement as to just how the gland is affected and how this effect is manifested. Housay¹ produced goiter in two white rats by giving them water from the goitrous region of Cerrillos, Argentina. This water is reported to contain fluorine. Goldenberg² produced a condition in rats which resembled cretinism by the administration of sodium fluoride. The thyroids of these rats were from five to six times as large as those of normal rats. Tolle and Maynard³ and Kick and his associates⁴ on the other hand could detect no enlargement of the thyroids of rats on different levels of fluorine for varying lengths of time.

Cristiani⁵ observed marked lesions in the thyroids of guinea pigs dying from chronic fluorine intoxication. Phillips and Lamb⁶ observed a mild parenchymatous

TABLE 1.—The Number of Cases and Degree of Hyperthyroidism as Measured by the Basal Metabolic Rate and the Fluorine Content of the Thyroid Gland

Range of Fluorine (P. p. M.)	Basal Metabolic Rate Range			
	Below +10	+11 to +20	+31 to +50	Above +50
Below 10	6*	7	2	3
10-20	1	3	2	5
20-30	1	1	1	1
Above 30	1	1	2	1

* Figures give number of cases in respective range.

proliferation in the thyroids of rats fed sodium fluoride, but no gross hypertrophy was observed. Kick and his associates⁴ observed no pathologic changes in the thyroids of rats fed sodium fluoride. Phillips, Hart and Bolstedt⁷ observed no histologic changes in the thyroids of dairy cattle fed on a ration containing 0.088 per cent of fluorine for four and a half years, although the fluorine content of the thyroids was increased some 240 times over that of the control animals.

Goldenberg² produced a glycosuria and obtained a decreased basal metabolic rate in rats by the injection of sodium fluoride. He also showed that ten parts of sodium fluoride precipitated thyroxine.⁸ He has

From the Department of Agricultural Chemistry, University of Wisconsin.

Published with the approval of the Director of the Wisconsin Agricultural Experiment Station.

The material used in this study was obtained with the cooperation of Dr. Erwin R. Schmidt of the Department of Surgery, Wisconsin General Hospital.

1. Housay, B. A.: Goitre expérimental provoqué par l'eau de Cerrillos (salina). *Compt. rend. Soc. biol.* 83:1244, 1920.

2. Goldenberg, L.: Action physiologique des fluorures, *Compt. rend. Soc. de biol.* 95:1169, 1926.

3. Tolle, C., and Maynard, L. A.: A Study of Phosphatic Limestone as a Mineral Supplement, *Bull.* 530, Cornell Univ. Agric. Expt. Sta., 1931.

4. Kick, C. H.; Bethke, R. M.; Edgington, B. H.; Wilder, O. H. M.; Record, P. R.; Wilder, W.; Hill, T. J., and Chase, S. W.: Fluorine in Animal Nutrition, *Bull.* 558, Ohio Agric. Expt. Sta., 1935.

5. Cristiani, H.: Altération de la glande thyroïde dans l'intoxication fluorée, *Compt. rend. Soc. de biol.* 103:554 (Feb. 28) 1930.

6. Phillips, P. H., and Lamb, A. R.: Histology of Certain Organs and Teeth in Chronic Toxicosis Due to Fluorine, *Arch. Path.* 17:177 (Feb.) 1934.

7. Phillips, P. H.; Hart, E. B., and Bolstedt, G.: Chronic Toxicosis in Dairy Cows Due to the Ingestion of Fluorine, *Research Bull.* 12, Wisconsin Agric. Expt. Sta., 1934.

8. Goldenberg, L.: Glycosurie et perturbation de la glycémie provoquées par le fluorure de sodium, *J. physiol. et path. Gén.* 29:42 (Sept.) 1928; Action du fluorure de sodium sur le métabolisme basal, *ibid.* 28:556 (Sept.) 1930.

9. Goldenberg, L.: Comment agiraient-ils thérapeutiquement les fluorures dans le goitre exophtalmique et dans l'hyperthyroïdisme, *Semana méd.* 1:1659 (June 2) 1932.

reported beneficial results with the use of sodium fluoride in the treatment of hyperthyroidism.⁹

Litzka¹⁰ showed that 3-fluorotyrosine acts antagonistically to the thyroid secretions in that it spares the glycogen of the liver, prevents loss of body weight in animals with experimental hyperthyroidism and lowers the resistance of animals to acetonitrile poisoning. Kraft¹¹ showed that 3-fluorotyrosine slowed up the increased rate of metamorphosis of tadpoles produced by thyroxine administration. May¹² used 3-fluorotyrosine in the treatment of hyperthyroidism. In all cases improvements occurred, including a decrease in the size of the neck and a decreased basal metabolic rate.

Kraft and May¹³ found 105 micrograms of fluorine per hundred cubic centimeters of whole blood from normal persons but only 62 micrograms in the blood from a person suffering with hyperthyroidism. The blood serum of the hyperthyroid patient contained 80 micrograms of fluorine, but after five months of treatment with 3-fluorotyrosine this was increased to 117 micrograms. They also observed a high fluorine content in waters from regions where endemic goiter was prevalent as compared to nongoitrous regions.

Phillips and his co-workers¹⁴ in this laboratory have been unable to verify the results of Goldenberg on rats, guinea pigs or chickens. "Experimental hyperthyroidism" was induced by the feeding of desiccated thyroid. They found that sodium fluoride markedly increased the toxicity of desiccated thyroid and vice versa. Alone sodium fluoride had no effect on the basal metabolic rate, but when fed with desiccated thyroid it caused a greater rise than that induced by the desiccated thyroid alone.

Since the discovery that fluorides are the cause of mottled teeth, the high fluorine content of some of our drinking waters has been observed. It is probable that the teeth and bones are not the only parts of the body influenced by the resulting high fluorine intake. From the foregoing results it seems logical to expect some effect on the thyroid which should be accompanied by an increased fluorine content in the gland. Since fluorine may play some part in the condition of hyperthyroidism, a study was made of the relationship between the fluorine content of the thyroid gland and hyperthyroidism.

EXPERIMENTAL

During the spring of 1937, portions of thyroids from forty patients undergoing thyroidectomies were obtained from a local hospital. The patients with hyperthyroidism were from different parts of the state of Wisconsin. These cases were the regular hospital cases for that period, and no special control measures were taken. In two of the cases the operation was performed in two stages, the second lobectomy being performed about two weeks after the first one.

Twenty-two of the patients received iodine therapy before operation consisting, for the most part, of five

drops of compound solution of iodine three times a day (about 0.11 Gm. of iodine daily) for from one to seven weeks, and 20 cc. of a 10 per cent sodium iodide solution on the day of operation. Eight of the patients received no preoperative treatment with iodine, and we have no record of any for the other ten.

The basal metabolic rate of each patient was taken both before and after the operation.

One thyroid was obtained at autopsy from a man who died of peritonitis and suffered from ulcers of the stomach. Since no symptoms of thyroid dysfunction were observed, this was considered an example of a normal thyroid.

The thyroids were all dried, finely ground and bottled until ready for analysis. For determining the fluorine content of these thyroids, a 2 Gm. sample of the finely ground thyroid was moistened with 2 cc. of a saturated solution of sodium carbonate. The sample was dried on the hot plate and then ashed according to the pro-

TABLE 2.—The Number of Cases and Degree of Hyperthyroidism as Measured by the Basal Metabolic Rate and the Iodine Content of the Thyroid Gland

Range of Iodine, per Cent	Basal Metabolic Rate Range			
	Below +10	+11 to +30	+31 to +50	Above +50
Below 0.10	2	5	1	
0.10-0.20	4	2	2	
0.20-0.30	..	3	1	6
Above 0.30	..	2	2	3

TABLE 3.—Changes in the Fluorine and Iodine Content of the Thyroid Between Lobectomies

Case	Fluorine, P. p. M.	Iodine, per Cent	Basal Metabolic Rate
1 First lobectomy.....	0.8	0.33	+32
Second lobectomy.....	3.5	0.41	+15
2 First lobectomy.....	13.0	0.23	+62
Second lobectomy.....	3.7	....	+35

cedure outlined by Chang, Phillips and Hart.¹⁵ The fluorine in the resulting ash was determined by Armstrong's¹⁶ micromodification of the thorium nitrate titration method of Willard and Winter.¹⁷ The iodine content of most of the thyroids was determined, but in some instances there was not enough of the sample to make this analysis. Iodine was determined by the method of Elmslie and Caldwell.¹⁸ The dry weight of the extirpated portion of each thyroid was also obtained.

RESULTS

The weights of the dry extirpated portions of the thyroids ranged from 1.4 to 74.7 Gm. The fluorine content of these glands ranged from 1.5 to 95 parts per million, or from 0.005 to 2.6 mg. of fluorine in the extirpated portion of the gland. The iodine varied from 0.02 to 0.41 per cent (0.9 to 88.2 mg. of iodine in the extirpated gland).

No definite correlation existed between the basal metabolic rate and the fluorine content of the thyroids, either on a parts per million or on a total fluorine basis, or between the iodine and the fluorine. However, in most cases in which there was a high parts per million

10. Litzka, G.: Die antithyreotische Wirkung des Fluortyrosins, Arch. f. exper. Path. u. Pharm. 183: 436, 1936.
11. Kraft, K.: Beiträge zur Biochemie des Fluors, Ztschr. f. physiol. Chem. 245: 58, 1936.
12. May, W.: Die Behandlung der Hyperthyreosen einschliesslich des schweren genuinen Morbus Basedow mit Fluor, Klin. Wchnschr. 16: 562 (April 17) 1937.
13. Kraft, K., and May, Richard: Beiträge zur Biochemie des Fluors: 11. Fluorbestimmungen an Blut und Wassern, Ztschr. f. physiol. Chem. 246: 233, 1937.
14. Phillips, P. H.; English, H. E., and Hart, E. B.: The Influence of Sodium Fluoride upon the Basal Metabolism of the Rat Under Several Experimental Conditions, Am. J. Physiol. 113: 441 (Oct.) 1935.
15. Phillips, P. H.: Further Studies on the Effects of Sodium Fluoride Administration upon the Basal Metabolic Rate of Experimental Animals, ibid. 117: 155 (Sept.) 1936.
16. Phillips, P. H.; English, H. E., and Hart, E. B.: The Augmentation of the Toxicity of Fluorosis in the Chick by Feeding Desiccated Thyroid, J. Nutrition 10: 399 (Oct.) 1935.

15. Chang, C. Y.; Phillips, P. H., and Hart, E. B.: Effect of Feeding Raw Rock Phosphate on the Fluorine Content of the Organs and Tissues of Dairy Cows, J. Dairy Sc. 17: 695, 1934.
16. Armstrong, W. D.: Microdetermination of Fluorine, Indust. & Engin. Chem. 5: 384, 1936.
17. Willard, H. H., and Winter, O. B.: Indust. & Engin. Chem., anal. ed. 5: 7, 1933.
18. Elmslie, W. P., and Caldwell, P.: Proposed Method for Iodine, J. Assn. Official Agric. Chemists 18: 338, 1935.

fluorine content in the thyroid there was also a high basal metabolic rate (above +30, table 1). There is no such indication with regard to the total fluorine in the gland. A much better correlation existed between the iodine content of the gland and the basal metabolic rate (table 2). However, all the patients with a high basal metabolic rate and a high iodine content of the thyroid had received iodine therapy.

In both cases in which the thyroidectomy was performed in two stages, the first portion removed had a higher fluorine content and a lower iodine content than the second portion. During this period there was an accompanying fall in the basal metabolic rate.

During the course of this study an unusually large ash was observed for certain of the thyroids high in fluorine. Whether this is due to a deposition of organic or inorganic fluorides is unknown. Goldenberg⁹ precipitated thyroxine with sodium fluoride, but he did not determine the nature of the resulting product.

COMMENT

All the thyroids examined contained fluorine. No relationship was observed between the amount of fluorine in the gland and the fluorine content of the potable waters in the areas where the cases originated. The cause of the great variation in the content of fluorine in the thyroid is unknown.

All the thyroids with a fluorine content of more than 20 parts per million were from patients having a basal metabolic rate of over +30, with one exception. This seems important when considered in the light of the prevailing conception that fluorides act to lower the basal metabolic rate. In these cases there was certainly no indication of a fluoride deficiency, which is believed by some to occur in hyperthyroidism. It is difficult to draw any definite conclusions from these data, because many of the factors which may have exerted some influence on this study were beyond experimental control. For instance, heavy iodine therapy in these cases may have influenced the action of fluorine in the thyroid gland. It is generally accepted that iodine therapy causes a decrease in the basal metabolic rate, and such therapy may have influenced the fluorine content of the gland prior to hospitalization. These data may, however, indicate that fluorides do not act directly on the thyroid gland to lower the basal metabolic rate.

It appears that the concept of an antagonistic action of fluorine against the activity of the thyroid gland is not supported by the data obtained in the only cases of double lobectomies available. In these two cases there was a marked drop in the fluorine content of the second lobe over that found in the first lobe. Concurrently a marked drop in the basal metabolic rate was obtained. These patients were under iodine therapy and the iodine value rose during this interval. It is possible that the iodine therapy may have replaced or forced the fluorine out of the gland. It is of interest to note that high iodine values and high fluorine values did not occur simultaneously in the same gland. This may be in keeping with May's hypothesis of iodine-fluorine antagonism,¹⁰ but it appears in this case that a change in diet plus the iodine therapy may have caused an exodus of the fluorine from the thyroid. The disconcerting fact about these two cases, however, is that both sets of fluorine values for the first lobectomies were relatively low and were near what was assumed to be a normal level.

These data suggest that in cases of hyperthyroidism the disease is not caused by a lack of concentration of fluorine in the thyroid gland. They do not allow of an interpretation suggesting that fluorine concentration in the gland itself is responsible for the disease, nor do they indicate that the quantities present may have exerted a depressing action on the activity or functions of the gland.

SUMMARY AND CONCLUSIONS

1. In cases of hyperthyroidism, fluorine was found to occur in the thyroid gland in widely varying amounts.
2. No correlation was established between the fluorine content of the thyroid gland and the basal metabolic rate of the patient.
3. No relationship was observed between the iodine and the fluorine content of these thyroids.
4. In two cases in which double lobectomies were performed, a decrease in the fluorine content of the thyroid occurred in the interim between the two operations. This was accompanied by a decrease in the basal metabolic rate and an increase in the iodine content of the gland.
5. The data obtained gave no definite evidence that fluorine in any way played a part in human hyperthyroidism by its action on the thyroid gland.

INTRADERMAL DYE TEST FOR VITAMIN C DEFICIENCY

HENRY G. PONCHER, M.D.

AND

CHARLES H. STUBENRAUCH, JR., B.S.
CHICAGO

Experimental and clinical investigations during the past few years have definitely established the value of studies of the cevitamic acid level in blood and urine in appraisal of the vitamin C balance. While determination of the cevitamic acid level in the plasma and the urine is not technically difficult, it seemed desirable to have a simple procedure that would enable the physician in his office to confirm a diagnosis of vitamin C deficiency before it became clinically manifest (subclinical scurvy).

The values for cevitamic acid in the urine and the plasma have been shown to have a definite correlation with the degree of tissue saturation. Since the determination of cevitamic acid is dependent on the reduction of a blue dye, 2:6-dichlorophenolindophenol, to its leuco form, the possibility of studying the reduction of the dye directly in the tissues suggested itself. While this was under consideration Rotter¹ of Budapest published a preliminary report of just such a test. He reported that when small quantities of the dye were injected into the soles of guinea pigs the dye was decolorized by the tissues at a rate dependent on the cevitamic acid content of the tissues. In healthy animals the decolorization took place rapidly, while in animals with scurvy the disappearance was delayed. Comparable results were noted when the dye was injected intradermally into patients on vitamin C-rich and on vitamin C-deficient diets.

We therefore decided to confirm his results. However, during the course of our investigation Portnoy

From the Department of Pediatrics, University of Illinois College of Medicine, and the Pediatric Service of the Cook County Hospital and of the Research and Educational Hospital.
1. Rotter, H.: Determination of Vitamin C in the Living Organism. *Nature* 139:717 (April 24) 1937.

19. May, W.: Antagonismus zwischen Jod und Fluor im Organismus. *Klin. Wchnschr.* 14:790, 1935.

and Wilkinson² published a report on human subjects confirming the results reported by Rotter. They stated the conclusion that while the intradermal test did not constitute a direct measure of the cevitamic acid content of the tissues, because of other reducing substances in the skin, it was a useful, rapid clinical test for vitamin C subnutrition and was worthy of further study. According to their observations a decolorization time of less than five minutes indicates saturation of the tissues with vitamin C, while ten minutes or longer is in favor of a deficiency.

The results of our investigation follow.

METHOD AND TECHNIC

The method used was that described by Rotter¹ and later by Portnoy and Wilkinson.² A solution containing 2 mg. of the powdered dye 2:6-dichlorophenolindophenol in 4.9 cc. of distilled water was employed for the intracutaneous injections. To prepare this solution, the dye was dissolved in the proportion of 4 mg. of dye to 4.9 cc. of distilled water. The solution was then passed through a Seitz filter for sterilization. A portion of the sterile solution was removed with a sterile pipet and titrated against a known solution of cevitamic acid (standardized against hundredth normal iodine solution). A solution of dye containing 2 mg. of 2:6-dichlorophenolindophenol in each 4.9 cc. of water was also titrated against the known solution of cevitamic acid. Then the sterile filtrate was diluted with sterile water to its correct strength of 2 mg. of dye in 4.9 cc. of distilled water. After two weeks the solution was restandardized or a fresh solution was prepared.

The injections were made into the skin on the volar surface of the forearm. An area was chosen where there were no hairs or superficial veins. It was cleansed with ethyl alcohol and allowed to dry. Then an intradermal injection was made in the usual way. The dye was injected (0.01 cc.) immediately beneath the epithelium. This resulted in a wheal about 2 mm. in diameter. The time of injection and the time of complete disappearance of the blue color were recorded. From two to eight injections were made in each subject and an average of the disappearance times was taken as the correct value for that patient.

At the time the tests were made, 5 cc. of blood was drawn from each subject and the cevitamic acid level determined. The macromethod of Farmer and Abt³ was used in this procedure.

RESULTS

Tests were made on forty-one persons. Included were six patients with clinically manifest scurvy, nine in whose blood the cevitamic acid level was subnormal and twenty-six with a normal amount of cevitamic acid in the blood.

The accompanying table shows the disappearance time for each subject's test and also the level of cevitamic acid in his blood. In the group with scurvy the decolorization time ranged from 4 minutes to 8 minutes, the average being 5.8 minutes. In the group with suboptimum levels the time ranged from 6.8 to 12 minutes and the average was 9.4 minutes. In the normal group the time ranged from 3.5 to 13.1 minutes and the average was 7.6 minutes.

The chart shows in graphic form the decolorization times and the levels of cevitamic acid. It can be seen that there is no correlation between the length of time required for decolorization of the dye in the skin and the amount of cevitamic acid in the blood.

COMMENT

Rotter¹ concluded from his experiments that a decolorization time of from 5 to 10 minutes indicates a normal cevitamic acid content of the tissue and that decolorization time of more than 10 minutes indicates a deficiency of vitamin C.

Decolorization Times, with Level of Cevitamic Acid in Each Case

Patient	Decolorization Time, Minutes	Cevitamic Acid in Blood, Mg. per 100 Cc.
Group with Scurvy		
J. S.	4.0	0.45
P. A.	4.0	0.4
C. H.	5.0	0.2
C. C.	6.5	0.4
H. S.	7.0	0.15
L. F.	8.0	0.25
Group with Suboptimum Levels		
S. R.	6.8	0.0
A. G.	7.7	0.5
J. L.	8.1	0.5
R. H.	8.4	0.5
O. R.	9.3	0.6
L. L.	9.8	0.7
H. O.	10.5	0.5
M. S.	11.7	0.5
M. Q.	12.0	0.0
Normal Group		
S. A.	3.5	1.7
G. O.	4.0	1.0
C. S.	5.2	1.2
H. W.	5.5	1.6
H. P.	5.5	1.2
C. H.	5.5	1.2
A. L.	5.7	0.8
T. K.	6.0	0.9
M. A.	6.0	1.1
A. B.	6.5	1.5
W. E.	7.0	1.1
F. S.	7.2	0.8
E. A.	7.7	1.4
H. O.	8.0	1.3
B. I.	8.0	1.2
M. S.	9.1	1.2
R. H.	9.2	1.2
L. Z.	9.2	0.8
J. C.	9.2	0.8
E. D.	9.5	1.6
K. A.	9.6	0.8
S. K.	11.2	1.0
J. I.	11.5	1.2
O. K.	11.7	0.8
J. M.	12.4	1.3
C. M.	13.1	1.3

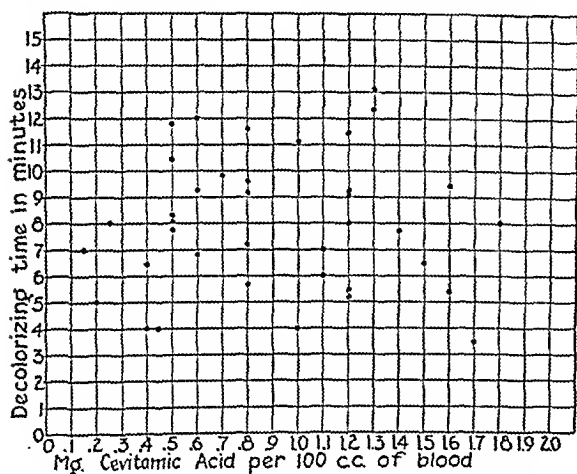
Portnoy and Wilkinson² determined the level of cevitamic acid in the blood of thirty-five patients. They found that the mean decolorization time for twenty-one patients with a level between 0.27 and 0.52 mg. per hundred cubic centimeters (deficiency group) was 16.9 minutes. The mean for fourteen patients with a normal level (between 0.72 and 1.3 mg.) was 7.5 minutes. However, six of the patients in the deficiency group had a decolorization time of ten minutes or less, while four of the patients in the normal group had a decolorization time of 10 minutes or more. In the deficiency group the value for the individual subjects ranged from 3 minutes to 29 minutes, while in the normal group the value ranged from 3 minutes to 13 minutes. It would seem from these figures that in

2. Portnoy, Benjamin, and Wilkinson, J. F.: Vitamin C Deficiency: An Intradermal Test, *Brit. M. J.* 1: 328-329 (Feb. 12) 1938.

3. Farmer, C. J., and Abt, A. E.: Determination of Reduced Ascorbic Acid in Small Amounts of Blood, *Proc. Soc. Exper. Biol. & Med.* 34: 146-150 (March) 1936.

any one case the intradermal test gave no accurate measurement of the cevitic acid saturation. For example, a patient with a level of cevitic acid in the blood of 0.4 mg. per hundred cubic centimeters had a decolorization time of 4 minutes, while one with a level of 1.25 mg. had a decolorization time of 4 minutes. On the other hand, a patient with a level of 0.5 mg. had a decolorization time of 3 minutes, while another with the same concentration had a time of 16 minutes.

Our own work shows the same lack of correlation between the decolorization time and the level of cevitic acid in the blood. At a level of 0.5 mg., for example, the following decolorization times were obtained for different subjects: 7.7, 8.1, 8.4, 10.5 and 11.7. At a level of 1.2 mg. the decolorization times were 5.2, 5.5, 8.0, 9.1 and 11.5. However, it is interesting that the decolorization time did not vary for the same person from day to day. In one case, for instance, the decolorization time on various days was 5, 5.5, 5, 6 and 5. We believe that this indicates that the difference in the decolorization time of different persons cannot be due to any great extent to experimental error.



Relationship of the decolorizing time of the intradermally injected dye to the level of cevitic acid in the blood of forty-one subjects.

It is particularly interesting that our six patients with clinical scurvy, with very low levels of cevitic acid in the blood, showed the shortest average decolorization time. Not one showed a decolorization time as long as 10 minutes, the time which was considered by Portnoy and Wilkinson to be the upper limit of normal. These patients were tested several times because we felt that they would surely have a long decolorization time if this time was dependent on the vitamin C saturation of the tissues. Doubtless the dye is actually decolorized by various reducing agents in the skin. Cevitic acid is only one of these agents and may not be the most important. Investigation of a larger series of cases and a more detailed study of some of the possible variables are desirable to elucidate this point.

SUMMARY

Our results do not confirm the conclusions of Rotter or Portnoy and Wilkinson. The data indicate that the intradermal dye test in its present form cannot be relied on to give satisfactory clinical information as to the cevitic acid saturation in the individual case. Further study is necessary to determine whether the principle behind the test can be utilized clinically in assessing the state of vitamin C nutrition.

THE TREATMENT OF PARATHYROID TETANY WITH DIHYDRO-TACHYSTEROL

CYRIL M. MacBRYDE, M.D.

ST. LOUIS

Parathyroid tetany is an infrequent but serious occurrence following operations on the thyroid gland. Although modern surgery has reduced its incidence in large clinics to figures ranging from 1.5 to 0.5 per cent,¹ the actual number of cases has become larger because of the increasing frequency of operations on the thyroid and parathyroid glands. From one institution as many as eighty-eight cases were reported during a six year period.² Although the symptoms in many cases are temporary, chronic tetany develops in a number of patients because of removal of or permanent injury to the parathyroid glands or to their blood supply. Too little attention has been paid to the chronic and latent cases and therapeutic efforts have been directed chiefly toward the relief of the more dramatic acute symptoms. A review of the measures used to alleviate chronic tetany reveals their inadequacy. The intravenous use of calcium salts and the subcutaneous or intramuscular administration of parathyroid extract will relieve acute manifestations and temporarily restore the blood calcium to normal. These measures, however, are not suited to prolonged use because of the transitory rise of the blood calcium and the necessity of repeating the injections at least daily. A tolerance to parathyroid extract is frequently developed, so that increasingly large doses are necessary and finally little or no effect is obtained. This observation, first made by Albright and his co-workers,³ was amply confirmed in three of our cases.

Until one year ago my associates and I employed the usual treatment in our chronic cases: large doses of calcium salts by mouth combined with hydrochloric acid or ammonium chloride and with cod liver oil or viosterol in large doses. We have given calcium gluconate and lactate with acid salts in doses up to 25 Gm. a day. Patients have, however, complained of gastrointestinal disturbances from this medication. We have prescribed viosterol in amounts of from 1 to 4 cc. daily without achieving or maintaining serum calcium at normal levels. In addition we have used low phosphorus diets as advocated by Shelling.⁴

In our experience parathyroid transplants have been ineffective, even when performed after preliminary culture of the tissue in the recipient's serum, as advocated by Stone, Owings and Gey.⁵ Two patients receiving tissue so prepared showed no improvement. Even after the procedure was repeated four times at intervals of some months in one of these cases, no definite results were observed. A third patient experienced temporary benefit from the transplantation of a parathyroid gland obtained from her mother.

From the Department of Medicine, Washington University School of Medicine, and the Barnes Hospital.

1. Swinton, N. W., and Claiborne, T. S.: *Postoperative Parathyroid Tetany*, S. Clin. North America 16: 1601-1611 (Dec.) 1936.

2. Boothby, W. M.; Haines, S. F., and Pemberton, J. del.: *Postoperative Parathyroid Insufficiency*, Am. J. M. Sc. 181: 81-96 (Jan.) 1931.

3. Albright, Fuller; Bauer, Walter; Ropes, Marion, and Aub, J. C.: *Studies of Calcium and Phosphorus Metabolism: The Effect of the Parathyroid Hormone*, J. Clin. Investigation 7: 139-181 (April) 1929.

4. Shelling, D. H., and Goodman, M. J.: *Calcium and Phosphorus Studies: Importance of Low Dietary Phosphorus in Treatment of Parathyroid Tetany*, J. A. M. A. 102: 669-673 (March 3) 1934.

5. Stone, H. B.; Owings, J. C., and Gey, G. O.: *Living Grafts of Thyroid and Parathyroid Glands*, Surg., Gynec. & Obst. 60: 37-40 (Feb.) 1935.

Combinations of these various measures have been of some value and we have been able to raise the serum calcium from values of 5.5 and 6 mg. to 7, 7.5 or even 8 mg. per hundred cubic centimeters. Periods of manifest tetany have been infrequent. There have always been, however, numerous more or less disabling symptoms ranging from mild paresthesias to severe muscular cramping, abdominal pains and convulsive attacks. Despite our best therapeutic efforts, in three of the seven patients chosen for this study cataracts have developed and two have suffered severe epileptiform convulsions.

DIHYDROTACHYSTEROL

During the past year we have employed a new therapeutic agent, a derivative of irradiated ergosterol known as dihydrotachysterol. This substance has been employed in an oily solvent containing 5 mg. per cubic centimeter. With small doses of this drug given orally, we have been able for the first time to maintain patients with tetany symptom free and to keep the blood calcium at normal levels.

Holtz,⁶ working with Windaus in Göttingen, studied the individual products of the irradiation of ergosterol, their relative toxicity and their effects on calcium metabolism. Those products which have been isolated, in the order of their production by irradiation, are lumisterol, tachysterol, calciferol (vitamin D₂), toxisterol and suprasterol I and II. Among these it was found that tachysterol, toxisterol and the fraction believed to be vitamin D itself caused elevation of the blood calcium in experimental animals. The vitamin D fraction (calciferol was the name given to the crystalline substance) was the only irradiation product that exhibited antirachitic properties. Toxisterol was found to be three times as toxic as the vitamin D fraction, while tachysterol was only one third as toxic. Tachysterol, therefore, was selected for further study of its effects on calcium metabolism. A dihydro derivative was found to be still less toxic and to have a very marked effect on the blood calcium. Tachysterol is, like calciferol, an isomer of ergosterol with the formula C₂₈H₄₅OH. Dihydrotachysterol is C₂₈H₄₅OH.

With small doses of dihydrotachysterol by mouth it was possible to relieve tetany in parathyroidectomized animals and to keep the blood calcium approximately normal. Holtz introduced the preparation into use for the treatment of idiopathic hypocalcemic and parathyroprivic tetany. A number of patients have been treated, chiefly in Germany, with very satisfactory results. Arnold and Blum⁷ and Swinton⁸ have reported confirmatory observations.

In our clinic seven patients with chronic hypocalcemia and the symptoms of tetany have been treated with dihydrotachysterol. All of them were white women; five had been under our observation and treatment for some years. Their ages ranged from 21 to 56. In six of the patients the tetany occurred following thyroid operations, while in the youngest patient it was of the so-called idiopathic type.

6. Holtz, F.; Gissel, H., and Rossman, E.: Experimentelle und klinische Studien zur Behandlung der postoperativen Tetanie mit A. T. 10, Deutsche Ztschr. f. Chir. 242: 521-569 (March) 1934; Bericht über Erfahrungen mit A. T. 10, Klin. Wchnschr. 13: 104-108 (Jan.) 1934; Die Tetanie (Nebenschilddrüseninsuffizienz) und ihre Behandlung, Med. Klin. 32: 656-660 (May) 1936.
7. Arnold, C. H., and Blum, Henry: Control of Hypoparathyroidism, West J. Surg. 44: 546-555 (Sept.) 1936.
8. Swinton, N. W.: Postoperative Parathyroid Tetany, New England J. Med. 217: 165-169 (July 29) 1937.

REPORT OF CASES

CASE 1.—A woman aged 43, who had had a subtotal thyroidectomy for thyrotoxicosis in 1907, had a recurrence of the hyperthyroidism, and a second thyroid operation was performed in 1927. Five days following this operation, numbness and muscular spasms began. These occurred with varying severity during the next four years. Bilateral cataracts developed. A parathyroid transplant with tissue obtained from the patient's mother gave temporary improvement. Parathyroid extract was given daily until tolerance developed. She suffered from abdominal cramping, numbness, tingling and cramping of the hands and feet, headaches and vertigo. The serum calcium ranged from 5.5 to 8.1 mg. per hundred cubic centimeters during a prolonged period with 6 Gm. of calcium lactate and 20 drops of viosterol twice a day. The viosterol was omitted and 10 Gm. daily of calcium lactate was given for two weeks. The serum calcium ranged from 5.6 to 6.5 mg. and the blood phosphorus from 4.7 to 6.2 mg. At this point dihydrotachysterol therapy was started.⁹ One-third cc. was given three times a day and the calcium intake was unchanged. In six days the serum calcium had risen to 7 mg. per hundred cubic centimeters, on the eighth day it was 7.4 mg., on the tenth day 8.3 mg. and on the fourteenth day 10.1 mg. The dose was reduced to one-third cc. a day. On the twenty-second day the serum calcium was 10.6 mg. The blood phosphorus fell as the serum calcium rose, determinations ranging from 3.6 to 5 mg. per hundred cubic centimeters. During the seven months since dihydrotachysterol therapy was started there have been no signs or symptoms of tetany, and the serum calcium has been maintained at approximately normal levels. The calcium lactate dose has been 2.5 Gm. four times a day, and the patient has been given dihydrotachysterol, one-third cc. a day.

CASE 2.—A woman aged 35 had had a subtotal thyroidectomy for typical exophthalmic goiter in 1926. Hyperthyroidism recurred and a second operation was done in 1927. There was a recurrence of toxicity in 1933 and the patient received roentgen therapy. A third operation was done for recurrence in 1933. Within twenty-four hours following this operation symptoms of severe tetany appeared and the serum calcium dropped to 6 mg. per hundred cubic centimeters. Calcium gluconate 12 Gm. orally and 3 cc. of viosterol daily failed to control the symptoms. Parathyroid extract was given and complete relief of symptoms resulted while daily injections were given, but tolerance gradually developed until the extract was no longer effective. Despite doses of from 200 to 400 units daily the blood calcium remained at approximately 6 mg. and there were severe muscular contractions. Parathyroid transplants were tried four times—in December 1933, in April and August 1934 and in March 1936. We were unable to note any definite improvement as a result of these transplants of parathyroid tissue.

Symptoms of tetany persisted when the patient took 20 Gm. of calcium gluconate, 3 cc. of viosterol and from 4 to 6 cc. daily of diluted hydrochloric acid; the serum calcium was 7 mg. and the serum phosphorus 4.7 mg. When dihydrotachysterol, 0.5 cc. daily, was given the blood calcium rose to 8.9 mg. in four days and the calcium intake was promptly reduced to 3 Gm. a day. The serum calcium rose further and with 0.5 cc. of dihydrotachysterol and 3 Gm. of calcium gluconate the serum calcium values ranged from 10 to 10.2 mg. When the dihydrotachysterol dose was reduced to 0.25 cc. a day, the blood calcium fell slowly over a period of nine days to 8.2 mg. per hundred cubic centimeters. An increase of only 2 Gm. a day in the calcium gluconate intake, making a total dose of 5 Gm. daily, resulted in a return of the serum calcium to 10.2 mg. Since this time, during a period of over one year, the blood calcium has been kept at approximately normal levels with 0.25 cc. of dihydrotachysterol and from 5 to 8 Gm. of calcium lactate daily, and all the patient's symptoms have been relieved.

CASE 3.—A woman aged 46 had a subtotal thyroidectomy for thyrotoxicosis in April 1934. Symptoms of tetany developed gradually. Two months after the operation cramping and

9. The dihydrotachysterol used in these studies was supplied by the Department of Medical Research of the Winthrop Chemical Company.

paresthesia occurred. Therapy consisted of calcium lactate 10 Gm. and viosterol from 1 to 3 cc. daily. Acute episodes of generalized muscular cramping occurred from time to time and were controlled with 100 units of parathyroid extract once or twice a day. Immediately preceding the use of dihydrotachysterol the patient had been receiving 4 Gm. of calcium gluconate and 2 tablespoonfuls of cod liver oil daily. On this regimen the serum calcium was 7.5 mg., the phosphorus 4.8 mg. The cod liver oil was stopped, the calcium intake was unchanged, and 0.25 cc. daily of dihydrotachysterol was given. In seven days the calcium was 8.3 mg. In fourteen days the calcium was 8.8 mg., the phosphorus 4.3 mg. When dihydrotachysterol and calcium were omitted for twenty-one days the calcium fell to 7.7 mg. When 0.5 cc. daily of dihydrotachysterol was given and no calcium was added to that in the diet, the serum calcium could be maintained at 8.6 mg. With dihydrotachysterol 1 cc. daily the serum calcium rose to 10 mg.; with 1.3 cc. daily to 10.2 mg. With the dihydrotachysterol dose held at 1.3 cc. daily the administration of only 2 Gm. of calcium lactate a day caused a rapid rise in the serum calcium to 11 mg. The serum calcium level has since been maintained for a period of more than six months at from 9.3 to 9.9 mg. per hundred cubic centimeters with 4 Gm. of calcium lactate and one-third cc. of dihydrotachysterol per day, and the patient has been free of symptoms.

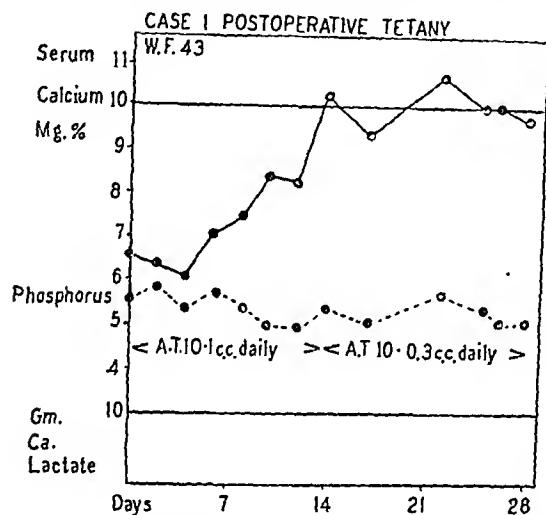


Chart 1 (case 1).—Results of dihydrotachysterol therapy in postoperative tetany: One cc. daily raised the blood calcium to normal in fourteen days. Following the establishment of normal blood calcium only very small daily doses were required. A. T. 10 means dihydrotachysterol.

CASE 4.—A woman aged 56 had a subtotal thyroidectomy for hyperthyroidism done in 1920. Three weeks after the operation cramping in the hands began. Tetany of varying severity ensued and during the course of the next ten years bilateral cataracts developed. In 1930 the patient began to have severe generalized epileptiform convulsions. These occurred at irregular intervals, especially when the blood calcium was unusually low. Just previous to this study there were as many as four or five convulsions a day and the blood calcium ranged around 7 mg. per hundred cubic centimeters, the blood phosphorus 5.8 mg. She was admitted to the hospital unconscious following a convulsive seizure witnessed in the outpatient department. She was given 1 cc. daily of dihydrotachysterol, no calcium being added to the diet. The serum calcium rose gradually over a period of two weeks to 9.8 mg. From the day more than six months ago when the dihydrotachysterol therapy was started there have been no further convulsions. All symptoms of tetany have been relieved and the serum calcium ranges from 9.2 to 10.2 mg., the phosphorus from 4.9 to 5.3 mg. Her maintenance treatment has been 0.6 cc. of dihydrotachysterol and 6 Gm. of calcium gluconate daily.

CASE 5.—A woman aged 27 had a subtotal thyroidectomy for thyrotoxicosis in 1927. Soon after the operation muscular cramping and paresthesia began. During the next two or three

years bilateral cataracts developed. One cataract was removed in 1932 and the other in 1935. Her treatment has consisted of parathyroid injections at intervals, calcium salts by mouth and viosterol. Parathyroid therapy was discontinued because of the expense and the diminishing effect. Six weeks before this study was started, severe muscular cramping set in. It was not well controlled with one teaspoonful of 50 per cent calcium chloride and two heaping teaspoonfuls of calcium gluconate daily. The serum calcium was 8.4 mg., phosphorus 5.3 mg. The calcium intake was unchanged and dihydrotachysterol 1 cc. daily was given. There was a gradual rise in the serum calcium to 9.3 mg. over a period of fourteen days and the phosphorus fell to 4.7 mg. The dose was reduced to one-third cc. daily and the serum calcium has been maintained at approximately 9.5 mg.; no further symptoms of tetany have occurred since the dihydrotachysterol therapy was started four months ago.

CASE 6.¹⁰—A woman aged 52 had a right thyroid lobectomy performed in July 1933 because of thyrotoxicosis, and a left lobectomy was performed in October 1935. The second operation was followed by a thyroid crisis and there was a stormy postoperative course. She gained weight after leaving the hospital but shortly began to complain of roaring in the ears, blurring of vision, anorexia, loss of weight, increasing stiffness of the limbs and muscular cramping. Occasionally there was a temporary partial paralysis of the tongue. When she was seen in January 1936 the basal metabolic rate was minus 17 per cent. The serum calcium was 5.3 mg. and the serum phosphorus was 5.1 mg. She was given parathyroid extract 100 units daily, drisdol (a solution of pure crystalline vitamin D₂ containing 0.25 mg. per cubic centimeter) 10 drops twice a day, calcium gluconate 6 Gm. twice a day, and desiccated thyroid 1½ grains (0.1 Gm.) a day. The serum calcium rose to 8.6 mg. and the symptoms were somewhat relieved but the patient still complained of stiffness of the jaws. The parathyroid extract was given in increasing doses over the next nine months, reaching 250 units daily, and drisdol was increased to 30 drops (1 cc.) daily, the thyroid medication being continued as before. The calcium gluconate was increased from 12 Gm. to 24 Gm. a day. Despite this rather intensive therapy there was a fall in the blood calcium at times to figures as low as 6 mg., and the maximum was 8.5 mg. A low phosphorus diet was instituted in addition to the foregoing therapy and this treatment was maintained for a year. The patient had frequent spasm of the throat, spells of confusion and carpopedal spasm. The serum calcium continued to range from 5.7 to 7.8 mg. Intravenous calcium was required frequently. The parathyroid extract was discontinued, as it no longer seemed to have any effect. At this time dihydrotachysterol therapy was instituted. All previous medication was discontinued. She was given 1 cc. daily of dihydrotachysterol and 4 Gm. daily of calcium gluconate. The blood calcium rose from 6.3 to 8.6 mg. per hundred cubic centimeters in five days and the patient was completely relieved of symptoms. In twenty-one days the serum calcium was 9.5 mg. She has remained well during the three months since dihydrotachysterol therapy was started and with the same doses of dihydrotachysterol and calcium the serum calcium has remained at approximately 9.5 mg. per hundred cubic centimeters.

CASE 7.—A woman aged 21 with idiopathic tetany began to have attacks of loss of consciousness associated with generalized muscular rigidity at the age of 14 years. She also experienced numbness and tingling of the hands and feet and occasional muscular cramping. The convulsive seizures and loss of consciousness occurred at intervals of months. Therapy consisted of a high calcium diet and occasionally intravenous calcium to relieve acute symptoms. She was also given various calcium salts in doses of from 4 to 20 Gm. and viosterol from 1 to 3 cc. daily. The patient entered the hospital following a convulsive attack. The serum calcium ranged from 5.9 to 6.5 mg. per hundred cubic centimeters, the serum phosphorus from 6.5 to 7.3 mg. She was given dihydrotachysterol, 6 cc. the first day, 4 cc. the second day and 2 cc. daily thereafter. In five days

10. Dr. Howard A. Rusk of St. Louis gave the author permission to publish the observations made on this patient.

the serum calcium had risen to 8.4 mg. and the Trousseau sign had disappeared. The patient felt much better and no longer complained of numbness and tingling of the extremities. There was no recurrence of the convulsions. The administration of calcium lactate 2.5 Gm. four times a day was begun. Nine days after the dihydrotachysterol was started the serum calcium was 11.3 mg. and the phosphorus had fallen to 4.4 mg. The dihydrotachysterol dose was reduced to 0.5 cc. a day. On the fourteenth day the serum calcium was 12.9 mg., phosphorus 3.9 mg. The dose was reduced to 0.5 cc. every other day and the calcium fell to 11.2 mg. per hundred cubic centimeters.

COMMENT AND SUMMARY

Six women suffering with chronic hypoparathyroidism following thyroidectomy and one with idiopathic tetany were completely relieved by treatment with dihydrotachysterol. The previous duration of the symptoms of tetany ranged from three and one-half

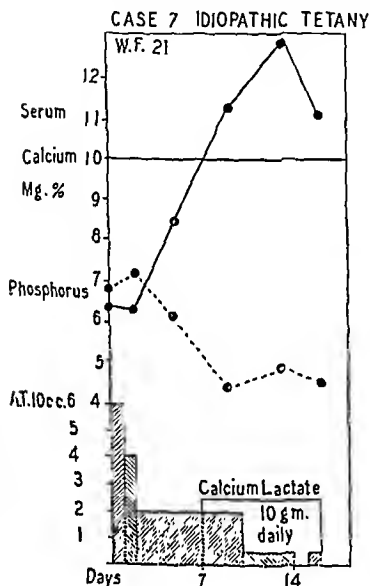


Chart 2 (case 7).—Results of dihydrotachysterol therapy in idiopathic tetany: Large doses induced a very rapid rise and hypercalcemia with mild toxic effects. The blood calcium remained at normal levels when the dose was reduced to 0.5 cc. every other day and 10 Gm. of calcium lactate was given.

and all previous therapy had been comparatively ineffective except for the temporary relief afforded by injections of parathyroid extract and calcium. Three patients had developed resistance to the parathyroid extract. Bilateral cataracts had developed in three of these patients previous to the dihydrotachysterol therapy. Two patients had suffered frequent severe epileptiform convulsions. The convulsions did not recur after treatment with dihydrotachysterol. Approximately normal serum calcium levels are now

being maintained in all seven patients with doses of from one-third to 1 cc. daily, supplemented by calcium lactate or gluconate from 4 to 10 Gm. a day. At the time this is written, one patient has been free from symptoms for more than one year, one for seven months, two for more than six months, and two for more than three months. No tolerance to the drug has been noted. In several cases smaller doses than those originally used seem sufficient to keep the blood calcium normal. In no case have we had to increase the dose.

EFFECTS COMPARED WITH PARATHYROID EXTRACT

Dihydrotachysterol alone will raise the serum calcium to normal, but daily doses of from 1 to 2 cc. are necessary if no calcium is added to that in the usual diet. The rise in the blood calcium in all seven cases was as definite as that obtained with parathyroid extract. The rise with this substance, however, is usually apparent in a few hours, reaches a maximum in from three to eight hours, then disappears in from twenty-four to forty-eight hours. With dihydrotachysterol the first increase is noted in about forty-eight hours. When small doses are given the rise continues until, in from

seven to fourteen days, normal calcium levels are reached. Thereafter the dose can usually be considerably reduced with maintenance of normal serum calcium content (chart 1). The blood phosphorus tends to show an initial slight rise, then a slow fall as the calcium approaches normal. The effect on calcium content persists for some time, a slow fall following discontinuance of the drug until in from one to three weeks previous levels are reached. Larger doses cause a more rapid rise in the serum calcium but are dangerous because of the slow cumulative effect and resultant hypercalcemia (chart 2).

Dihydrotachysterol has certain very definite advantages over parathyroid extract in the treatment of chronic tetany:

1. The effect is more prolonged.
2. It is taken orally.
3. No tolerance is developed.
4. It is less expensive.
5. It is stable and retains its potency when kept at ordinary room temperature.

A warning against the indiscriminate use of this very potent preparation is imperative. Excessive doses of dihydrotachysterol cause hypercalcemia and severe toxic effects. There is great individual variation in the response to the drug. Only small amounts are necessary and until maintenance dosage is established frequent determinations of the blood calcium must be made. Large doses that have been given to experimental animals have caused decalcification of the bones and metastatic calcification.

The mechanism of the action of this sterol has not yet been sufficiently studied. We are conducting calcium and phosphorus balance experiments to determine whether or not an increased storage occurs and whether the increase in blood calcium has as its source the gastrointestinal tract or the bones.

CONCLUSIONS

With small doses of dihydrotachysterol taken orally the symptoms of hypocalcemic tetany can be entirely relieved and the blood calcium can be maintained at normal levels. Larger doses are required if no calcium is given in addition to that normally contained in the diet. Small doses of calcium salts by mouth cause remarkable and prompt rises in blood calcium when the patient is receiving dihydrotachysterol. For the relief of the acute symptoms of hypoparathyroidism the methods of choice are the intravenous injection of calcium and the intramuscular injection of parathyroid extract. Parathyroid extract, however, loses its effect as treatment is continued and is not satisfactory for the treatment of prolonged tetany. Dihydrotachysterol is the only therapeutic measure in our experience to yield excellent results in treatment of chronic tetany.

600 South Kingshighway.

Man an Ape for Five Million Years.—All of the evidence indicates that man was an unpromising anthropoid ape for five million years or more, and the lowest kind of an apparently progressive and brutish savage for at least another million years. His acquisition of high civilization is very recent and perhaps only temporary. The period of human civilization is as inconsiderable in man's cultural history as is postglacial time in the age of the earth.—Hooton, E. A.: *Apes, Men, and Morons*, New York, G. P. Putnam's Sons, 1937, page 48.

CHANGES IN BLOOD PRESSURE PRODUCED BY PROSTATIC MASSAGE

H. J. HAMMER, M.D.

AND

T. L. SCHULTE, M.D.

Fellows in Urology, the Mayo Foundation
ROCHESTER, MINN.

After prostatic massage, some patients exhibit mild or marked vasomotor collapse which in a few instances terminates in syncope. In all cases there is a definite latent period. This observation stimulated our curiosity to determine what physiologic vasomotor changes were associated with prostatic massage and whether it could be correlated with any specific lesion. We decided to use responses of blood pressure and pulse rate as a guide to measure these changes, noting also the effect of posture. Observations were made on a series of 378 unselected patients as they presented themselves for examination.

To standardize the procedure as completely as possible, each patient was allowed a period of rest in order to establish a basal level of blood pressure as a control. All control readings were taken with the patient in the sitting position. The procedure then was explained

TABLE 1.—Comparisons of Blood Pressure in Entire Group of 378 Cases

Systolic Blood Pressure, Mm. of Mercury	Control		Systolic Rise		Diastolic Rise		Hyper-response		Decrease in Systolic and Diastolic Blood Pressure	
	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent
80-99	17	4	14	82	14	82	4	23	3	17
100-119	145	39	114	77	111	75	37	25	32	22
120-129	95	25	69	73	69	73	17	18	23	24
130-139	61	16	37	61	44	72	11	18	21	34
140-149	26	7	17	65	22	84	7	27	7	26
150-159	15	4	10	66	11	73	6	40	2	13
More than 160	16	4	14	87	13	81	9	56	1	6
Total	378	100	275	73	254	75	91	24*	89	23†

Average pulse rise (378 cases): 16.

* Total hyperresponse, normal group (347 cases): 76, or 21 per cent. Total hyperresponse, hypertensive group (31 cases): 25, or 81 per cent.

† No change in systolic or diastolic pressure in 5 cases, or 1 per cent.

carefully to the patient in order to exclude the factor of apprehension as much as possible. In the entire series the examination and massage were done by one of us while the other determined blood pressure and pulse rate. The blood pressures were taken in the conventional manner and the readings were determined from a mercury manometer which was in a fixed position on the wall beside the examining table. The manometer previously was adjusted to the average level of a patient's heart. The majority of pressures were taken on the right arm because of convenience of examination. However, determinations in fifty cases were made on the left arm and were compared with those on the right in order to rule out any discrepancy in results.

Examination and massage were then carried out in the usual manner. Most of the patients were massaged in the bent-over position; fifty were massaged while lying with the right side down. Observations on the blood pressure were made with the patient in three positions, sitting, bent over and lying.

Control pressures and pulse rates first were taken with the patient sitting. Then he was placed in the

bent-over position and the prostate gland was massaged. Immediately after this he was placed again in the sitting position and final readings were taken.

In the bent-over position, control readings again were taken first with the patient sitting. The patient then was placed in the bent-over position and readings were taken until a second control level of blood pressure was reached. Then massage was performed. Immediately after this, final readings were taken while the patient was still in the bent-over position.

In the lying position, control readings were taken first with the patient sitting. The patient then was placed in the reclining position and readings were taken until a second control level of blood pressure was reached. Then massage was performed. Immediately following this, final readings were taken while the patient was still in the lying position.

It was then possible not only to compare the responses of blood pressure and pulse after massage in three positions but also to determine the effect of posture alone. In order to rule out further the effect of apprehension, 143 patients were reexamined. This group consisted of patients on whom initial massage had been performed on the preceding day. As the experiment proceeded, it became obvious that nearly all patients who had hypertension responded with a considerable rise in both systolic and diastolic pressures. Also of interest was the fact that some patients who had normal control pressures showed a similar hypertensive response.

In order to obtain additional information, a series of fifty cases was studied by using the Hines-Brown cold pressor test;¹ the results were compared with those obtained after prostatic massage. These procedures were carried out on the same subjects on the same day and under the same basal conditions. In this series the left arm was used for readings. The patients were allowed a period of rest of thirty minutes in order to reach a basal level of blood pressure. To insure against the effect of one test influencing the results of the other, massage preceded the cold test in half of the group and the cold test preceded massage in the other half (tables 1, 2 and 3).

SUMMARY OF DATA

In four of 378 cases, syncope occurred. The average control blood pressure was 125 mm. of mercury systolic and 75 diastolic and, after massage, 62 mm. of mercury systolic and 41 diastolic. The average age was 39 years. Patients having prostatitis showed little difference in vasomotor responses as compared with those not having prostatitis. In this series there were only thirty-eight patients who had urologic lesions other than prostatitis. Their vasomotor responses were similar to the averages for the entire group. Among the patients who were hypersensitive to the procedure of massage, or who had hemorrhoids, anal fissure or various nervous states, vasomotor responses closely approximated those for the entire group. When readings for the right and left arms were compared and when the readings made on initial examination were compared with those made on reexamination, little appreciable differences were noted. Vasomotor responses after massage in the sitting, bent-over and lying positions were similar and the effect of posture was negligible. In 6 per cent of all cases:

1. Hines, E. A.: Reaction of the Blood Pressure of 400 Sick Children to a Standard Stimulus, *J. A. M. A.* 108: 1249-1250 (Arch.) 1937. Hines, E. A., and Brown, G. E.: The Cold Pressor Test: Measuring the Reactibility of the Blood Pressure: Data Concerning Normal and Hypertensive Subjects, *Am. Heart J.* 11: 1-9 (Jan.) 1936.

there was a considerable increase in the diastolic pressure with slight variation in the systolic. This occurred regardless of position. In the group of 278 patients examined in the bent-over position, thirteen had an average rise of 19 mm. of mercury in diastolic pressure; in the group of fifty patients examined in the lying position seven had an average rise of 15 mm. of mercury in diastolic pressure, and in the group of fifty patients examined in the sitting position two had an average rise of 26 mm. of mercury in diastolic pressure.

Of our entire group there were thirty-eight patients less than 30 years of age, 304 from 30 to 60 years and thirty-six more than 60 years of age. This last group was the smallest but showed the highest percentage of extreme responses (38 per cent). The first group had an average control blood pressure of 119 mm. of mercury systolic and 76 diastolic, the second 124 mm. of mercury systolic and 79 diastolic, and the third 138 mm. of mercury systolic and 93 diastolic. After massage, the average blood pressures for the three age groups mentioned respectively were as follows: 123 mm. of mercury systolic and 86 diastolic, 132 mm. of mercury systolic and 86 diastolic, 157 mm. of mercury systolic and 106 diastolic.

It is impossible to predict the vasomotor response on the basis of the systolic blood pressures, arranged in ascending order. Of 378 cases there were increases in systolic or diastolic pressure in 284 (75 per cent). Of the entire group there were eighty-nine (23 per cent) who had a decrease of both systolic and diastolic pressures. All patients had a rise in pulse rate; the average was 16 per minute.

Of this series there were seventy-six patients (20.1 per cent) for whom we might predict hypertension on the basis of a hyperresponse, to prostatic massage, of both systolic and diastolic blood pressures. We used Hines's standard of an increase of 20 mm. in systolic and 15 mm.

TABLE 2.—Comparison of Changes in Blood Pressure Caused by Massage of the Prostate Gland

Average Blood Pressure, Mm. of Mercury	Prostatitis, Grades 3 and 4,* and Other Urologic Lesions (Without Hyper- tension), Sixty Cases		No Prostatitis, Other Urologic Lesions or Hypertension, Forty-Seven Cases	
	Systolic	Diastolic	Systolic	Diastolic
Control.....	116	77	120	77
After massage.....	132	89	126	85
Rise.....	18†	16‡	15§	17#
Fall.....	13¶	8||	11*	8**
	Average pulse rise 16		Average pulse rise 15	

- * Graded on the basis of 1 to 4.
- † On basis of 51 cases (85 per cent).
- ‡ On basis of 42 cases (70 per cent).
- § On basis of 27 cases (57 per cent).
- # On basis of 29 cases (61 per cent).
- ¶ On basis of 7 cases (11 per cent).
- || On basis of 12 cases (20 per cent).
- ** On basis of 12 cases (24 per cent).

in diastolic pressure as an arbitrary level, above which we classified this reaction as a hyperresponse. The average rise in pulse rate was 17 per minute. The average age, in this group, was 44 years. There were thirty-one patients in the series who had essential hypertension. Of these, eighteen patients (58.06 per cent) showed an extreme response and only three patients showed minor falls in both systolic and diastolic pressures. Of this group, the average rise in pulse rate was 11 per minute and the average age of this group was 57 years.

In the experiment using both prostatic massage and the cold test in the same cases, it was found that as a result of massage the average increase in systolic pressure was 22 mm. of mercury and in the diastolic 20 mm. of mercury. The average rise in pulse rate was 23 per minute. As a result of the cold test, the average increase in systolic pressure was 19 mm. of mercury and in diastolic pressure 16 mm. of mercury. The average

TABLE 3.—Data on "Normal Hyperreactors" as Measured by Prostatic Massage and Hines-Brown Cold Test on the Same Patients, Fifty Cases

	Prostatic Massage	Cold Test
Hyperresponse, cases	18 (36%)*	13 (26%)
Average age, years.....	44	47
Average blood pressure control, millimeters of mercury	118/74	127/82
Average blood pressure after massage, millim- eters of mercury.....	144/100	160/107
Average rise, systolic pressure, millimeters of mercury	26	33
Average rise, diastolic pressure, millimeters of mercury	26	25
Average rise in pulse rate.....	22	2
Fall in pulse rate, cases.....	0	4

* Thirteen of these patients also had a hyperresponse to the cold test.

rise in pulse rate was 3 per minute. Following massage, eighteen patients (36 per cent) were found to have a hyperresponse, although in the cold test there were thirteen (26 per cent). In all cases in which there was hyperresponse to the cold test, there was hyperresponse to massage. The rise in pulse associated with massage may account for the increased incidence of hyperresponse associated with the group in which prostatic massage was performed as compared with the group in which the cold test was performed.

SUMMARY AND CONCLUSIONS

1. Syncope occurs after prostatic massage, according to our series, in 1 per cent of cases. It is characterized by marked vasomotor collapse following a latent period of from one to three minutes.
2. The following conditions may be ruled out as factors affecting the vasomotor response to prostatic massage: prostatitis; hypersensitivity as measured according to appreciation of pain; hemorrhoids and anal fissure, and various types of nervous states.
3. Comparison of observations made on the right arm with those on the left arm and comparison of observations made on initial examination with those made on reexamination show no appreciable differences.
4. Change of posture, exclusive of the effect of massage, from the sitting to the lying or bent-over position, causes a slight rise in systolic and diastolic pressures in the majority of cases.
5. The greatest responses of increase in blood pressure following prostatic massage were noted when the patient was in the lying position. Responses of lesser degree were observed among patients in the bent-over and sitting positions, respectively.
6. The response of the blood pressure following prostatic massage parallels the results obtained from the cold pressor test among both the patients who had normal blood pressure and those who had essential hypertension.
7. The considerable rise in blood pressure produced by prostatic massage among patients who had essential hypertension should be taken into consideration when such a procedure is undertaken.

Clinical Notes, Suggestions and New Instruments

A SIMPLIFIED METHOD FOR GROUPING HEMOLYTIC STREPTOCOCCI BY THE PRECIPITIN REACTION

J. HOWARD BROWN, PH.D., BALTIMORE

Since the publication of the work of Lancefield¹ on a serologic differentiation of human and other groups of hemolytic streptococci it has become increasingly evident that by the precipitin reaction these streptococci probably fall into a number of "groups" which are of fundamental systematic significance and of great practical importance. The groups so

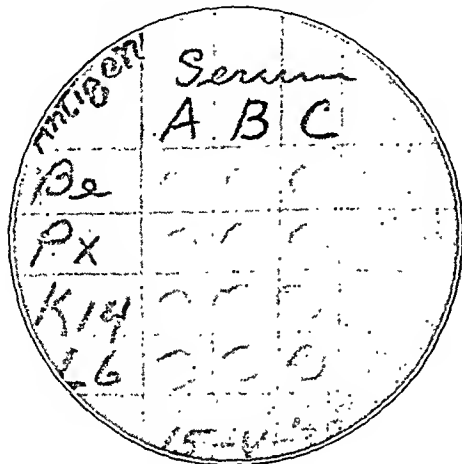


Fig. 1.—Hanging drops in Petri dish.

far recognized are indicated by the letters A, B, C, D, E, F, G, H and K. Evidence so far accumulated by various investigators indicates that most of the human pathogens, and certainly those responsible for epidemics of septic sore throat and scarlet fever, belong to group A. Although sporadic cases of human infection by streptococci of some of the other groups have been reported, there is reason to suspect that for man these streptococci are opportunist pathogens of little or no epidemiologic significance. On the other hand, it has been found that hemolytic streptococci of groups B and C are of great importance in veterinary pathology whereas those of group A are of minor significance.

Since human beings may harbor hemolytic streptococci of any of the serologic groups with or without symptoms of disease, and since cow's milk frequently contains hemolytic streptococci of groups B, C, D and E, of which those of group D are resistant to pasteurization, the desirability of being able to make a rapid diagnosis of the streptococci found in human material or in milk is apparent.

The group precipitin test as described by Lancefield requires the use of immune rabbit serums. The preparation of these group specific serums is time consuming, exacting and therefore beyond the facilities of many diagnostic laboratories. The preparation of the bacterial extract (antigen) used in the test requires relatively large amounts of broth culture and the use of a large centrifuge. Fortunately specific antisera for hemolytic streptococci of groups A, B and C are now becoming available on the market. These serums are necessarily quite expensive when used in the amounts required by the Lancefield technic. Using such serums, I have developed the following simplified technic, which follows the principles of the Lancefield method:

PREPARATION OF THE ANTIGEN

The culture is grown in 5 cc. of infusion broth containing 1 per cent of dextrose for from eighteen to twenty-four hours at 37 C. Many strains grow in the form of a sediment at the

bottom of the test tube; others need to be centrifuged. All but about 1 cc. of the supernatant broth is pipetted off and discarded. Two drops of metacresol purple indicator (0.04 Gm. dissolved in 60 cc. of 95 per cent alcohol and then diluted to 1/4 cc. with distilled water) are added to the remaining sediment suspension. From a drop bottle 2 per cent hydrochloric acid (about 6 per cent concentrated hydrochloric acid) is added until the indicator turns slightly pink (about pH 3.0). The tube of sediment is heated in a boiling water bath with occasional shaking for fifteen minutes and then cooled in running cold tap water for ten minutes. From a drop bottle 2 per cent sodium hydroxide is added until the color of the indicator passes through yellow and just begins to darken (about pH 7.5) but should not be noticeably purple. The tube is then centrifuged for about fifteen minutes and the clear supernatant used for the precipitin test. I have not found it necessary to dilute the antigen.

TECHNIC OF THE TEST

On the bottom surface of a nearly optically perfect Petri dish (a satisfactory brand of such dishes is known as "Plano") rule 12 mm. squares by means of a wax or diamond pencil. On the abscissa indicate the serums to be used; e.g., A, B and C. On the ordinate indicate the antigens. Both inside and outside surfaces of the bottom of the Petri dish must be very clean and free from lint, dust and finger prints but need not be sterile. Within the appropriate squares and on the inside surface of the bottom of the dish place one small (2 mm.) platinum loop of antigen and one loop of serum, mixing the serum with the antigen as added so as to make rather flat hanging drops when the dish is inverted. A platinum loop is specified because some of the cheaper substitutes give off alkali. To avoid carbon particles in the drops it is essential to burn off the loop thoroughly, preferably after dipping it into water to remove most of the serum each time before flaming. It may be necessary to centrifuge the serums occasionally to free them from any particles of native precipitate. One should be careful not to form a precipitate by introducing a hot loop into the serum or antigen. Into the lid of the Petri dish is placed a disk of moist, but not too wet, white filter paper. With the bottom uppermost the bottom is placed into the lid of the dish. The complete setup is shown in figure 1.

READING OF RESULTS

The assembled Petri dish is placed bottom up on the stage of a microscope and the drops are observed through a 16 mm. objective. The optimum illumination for observing particles

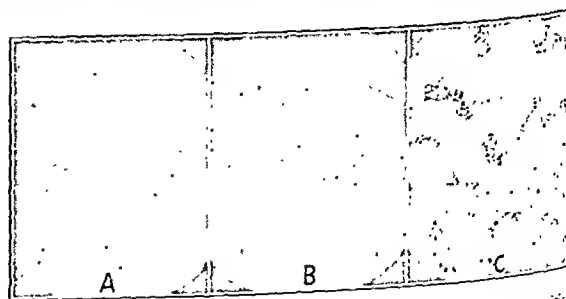


Fig. 2.—A, doubtful reaction; B, slight reaction; C, the usual positive reaction.

of precipitate is secured by closing the diaphragm of the condenser until a small (about 2 mm.) spot of light appears on the moist filter paper beneath the drop. With very little experience there need be no question about the interpretation of results. One soon learns to distinguish particles of foreign matter from the specific precipitate. In the serums which I have used the result is usually apparent within fifteen minutes and in one hour at room temperature it is fully developed. I have refrigerated the plates over night as a matter of routine but found no advantage in doing so. Seldom have there been any cross reactions within one hour. When they have appeared they have been doubtful or slight, as shown in figures 2A and B. The fully developed positive reaction is shown in figure 2C.

Sometimes, as the precipitate is forming, it assumes a diffuse ground-glass appearance, which may be caused to form clumps by carefully rocking the dish.

Using the technic described, I have grouped 236 strains of hemolytic streptococci of groups A, B and C. Of these strains seventy-six had been grouped by other investigators (Rebecca C. Lancefield, Helen Plummer, P. R. Edwards, P. H. Long and Eleanor A. Bliss) by the Lancefield technic. My grouping was entirely in agreement with theirs. A few strains of other serologic groups were also tested and gave no precipitate with serum A, B or C.

1833 East Monument Street.

Special Article

CLINICAL ASPECTS OF ULTRAVIOLET THERAPY

ETHEL M. LUCE-CLAUSEN, M.D.

ROCHESTER, N. Y.

This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—Ed.

To write another article on the subject of ultraviolet therapy would seem, at first sight, to be quite inexcusable. There are few subjects on which more papers have been published, few subjects more ably covered in articles of review, and, one might add, no subject more capable of reducing to utter despair an author faced with the necessity of saying something new. My excuse for a repetition of this oft-told tale is the advisability of keeping before the medical profession subjects of medical interest and importance, and also the fact that with a growing literature new observations emerge which need to be linked with antecedent fact.

Since the last series of these articles appeared in 1932, the developments of the subject, as will be explained later, are mainly concerned with the extension of radiation therapy to diseases other than rickets and tetany, and to the somewhat conflicting observations as to possible dangers of the excessive use of sunbaths and general treatments with radiation. It is impossible, within the scope of a short article, to attempt anything comprehensive, so that the bibliography given makes no claim to be complete, and in general only the more recent literature has been quoted.

HISTORICAL

The classic paper of Palm¹ in 1890 is of increasing rather than of diminishing interest. At that time the method of geographic survey in the study of the etiology of disease was in vogue and was the method employed by Palm. The Collective Investigation Committee of the British Medical Association had already studied the etiology of various diseases, including rickets, from the standpoint of their geographic distribution in the British Isles. This report was published in 1889.² Palm studied it and noted the follow-

ing three points: (1) the frequency of rickets in large towns and thickly populated districts, and its rarity in rural areas, (2) the greater frequency of the disease in rural areas in the south than in the north of Great Britain, and (3) a direct ratio between the incidence of rickets in a community and the massing together of its population.

Palm was a traveled man, for after practicing medicine in England and Scotland he went to Japan. Here he lived for nine years and saw practice among all classes of the native population. The striking absence of rickets in Japan, where food and hygienic conditions were worse than in England, compared with its high incidence in the latter country, appeared to be the starting point of his investigation. He issued a questionnaire to medical missionaries in China, India, Tibet and Morocco. He gives, in extenso, their replies. These replies convinced Palm that the one factor common to all districts where rickets was unknown was sunlight; the converse was also clear to him from the British investigation already quoted.

He urges in his discussion a more careful study of the physiologic and therapeutic action of sunlight. He quotes the work of Darwin³ in proof of the theory that light may strike an organism locally and its effect be transmitted. Darwin did a series of extremely interesting experiments on the effect of light on the bending of the coleoptile (called by Darwin the cotyledon) of *Phalaris canariensis*. These straight, cylindric coleoptiles normally bend toward the light. Darwin found that exposure of the tip of the coleoptile to light determined the bending of the lower part toward the light because, (a) when the tip of the coleoptile was either cut off or covered with a cap impermeable to light, bending did not occur, and (b) illumination of the lower part of the coleoptile, with the tip covered, produced no bending. Palm also recognized, from the work of Downes and Blunt, the bactericidal effect of "actinic rays" and urged in his final conclusion systematic and exact recording of "actinic rays" especially in sunless areas, the removal of rachitic children from crowded cities to sunny localities, the establishment of sanatoriums in such localities, the systematic use of sunbaths, and, finally, "the education of the public to the appreciation of sunshine as a means to health."

It seems incredible that this paper should not have attracted attention at the time of its publication, but, like all sound clinical observations, it was destined to receive full merit as soon as the time was ripe.

In 1919 Huldshinsky⁴ demonstrated by means of the x-rays the deposition of lime salts in the bones of rachitic children treated with exposures to the mercury vapor quartz lamp, and the truth of Palm's contentions became evident. To Huldshinsky is usually given the credit for this clinical discovery, although, as Park⁵ points out, there is a possibility that Buehholz made the same discovery many years earlier. It is interesting to note that Palm's suggestion, based on Darwin's experiments, that the effect of light is systemic and not local, was proved to be true when Hess⁶ showed that by irradiating only one wrist of a rachitic patient the deposition of lime salts in the nonirradiated wrist could be observed.

3. Darwin, Charles: *The Power of Movement in Plants*, New York, D. Appleton & Co., 1888, p. 468.

4. Huldshinsky, K.: *Heilung von Rachitis durch künstliche Höhensonne*, Deutsche med. Wochenschr. 45:712 (June 26) 1919.

5. Park, E. A.: *The Etiology of Rickets*, Physiol. Rev. 3:106 (Jan.) 1923.

6. Hess, A. F. and Unger, L. J.: *The Cure of Infantile Rickets by Sunlight*, J. A. M. A. 77:39 (July 2) 1921.

From the Department of Biology, University of Rochester.

1. Palm, T. A.: *The Geographical Distribution and Aetiology of Rickets*, Practitioner 14: 270-79 and 321-42, 1890.

2. Geographical Distribution of Rickets, Acute and Subacute Rheumatism, Chorea, Cancer and Urinary Calculus in the British Isles, Brit. M. J. 1: 113 (Jan. 19) 1889.

This historical background has been emphasized in this way because it is, in essence, a clinical one. The clinical demonstration of the deposition of lime salts in bone following ultraviolet irradiation blazed a trail which led the experimentalist into many fields.

EXPERIMENTAL

For the purposes of the present paper a detailed account of the chemistry of vitamin D is not necessary. I⁷ have reviewed the subject before and it has been reviewed by Bills⁸ and others. For exhaustive articles of review the reader is referred to Park,⁹ Korenchevsky,¹⁰ Laurens,¹⁰ Clouse¹¹ and Chick.¹² General articles dealing with the subject of ultraviolet radiation in relation to health have been written by Clark¹³ and Mayer.¹⁴ Such articles as these afford ample evidence of the impossibility of saying anything on this subject that has not been said before, and said in the best possible way.

ULTRAVIOLET THERAPY AND RICKETS

Rickets is a disease caused primarily by lack of sunlight; it is a disease of sunless areas, of winter months; a disease caused by artificial conditions which exclude sunlight, such as the massing together of the population in tenement houses and, in the East, of living in purdah. The influence of ultraviolet radiation on rickets may be considered from (1) the physiologic and (2) the clinical point of view.

Physiologic.—The curative effect of ultraviolet radiation on rickets and its prophylactic use in the prevention of the disease are based on known physiologic facts. Diets constituted in such a way that the ratio of calcium to phosphorus is high, usually about 4:1, and also deficient in vitamin D, will produce severe rickets in rats; young rats, placed on such a diet, will survive the diet only from six to seven weeks, and at autopsy will show all the classic signs of severe rickets. A short daily exposure to ultraviolet rays will, in spite of the deficiencies in the diet, make these rats survive as long as twenty-five weeks. They may die, but with normal bones. The mechanism that makes an organism capable of supplying mineral constituents for bone formation, even in spite of a shortage of it in the diet, is set in motion by ultraviolet radiation. That this effect is a chemical one and not brought about by some integrating mechanism in the body such as the nervous system, is shown by the following: Hess and Weinstock¹⁵ took some excised human skin and calf skin and irradiated it with a mercury vapor quartz lamp. Weighted amounts of this when fed to rats fed on a rickets producing diet proved to be completely protective, while similar amounts of nonirradiated skin were without effect. Light had conferred on the skin, although severed from its nerve and blood supply,

antirachitic properties. In the same way, a rickets producing diet can be made protective by exposure to ultraviolet radiation.

The Rays Responsible for this Effect: In the solar spectrum the protective region is a very narrow band of radiation ranging from 296 to 310 millimicrons and furthermore these radiations must be present in sufficient intensity to produce their effect.

Hess and Anderson¹⁶ working with a monochromatic illuminator, found antirachitic activity of wavelengths at 313 millimicrons to be very feeble, and they define this as the upper limit of the antirachitic field. It is obvious, therefore, that the rays responsible for the prevention and cure of rickets are very few, and, as these writers point out, during the winter months, when the shorter ultraviolet rays fail to reach the earth and the longer ones are less intense, "the width of the antirachitic zone of sunlight is only about 5 m μ ." Furthermore, this band of radiations is easily filtered out by such substances as moisture, dust and smoke.

Artificial sources of light, such as the carbon arc or the mercury vapor quartz lamp, emit radiations of shorter wavelength than those found in the solar spectrum. Sonne and Rekling¹⁷ showed that some of these—the region about 280 millimicrons—are markedly antirachitic; others around 248 and 240 millimicrons are less so.

Penetration of the Rays: Many writers have investigated the depth to which ultraviolet rays penetrate the skin. Most of them are agreed that the penetration is slight, roughly only 0.1 mm.¹⁸ Measurements of radiation that is absorbed, transmitted and reflected by the skin are admittedly very difficult to make and give variable results. Skin is not homogeneous in an optical sense, and light incident on it is largely reflected and scattered. Anderson and Macht¹⁹ point out that the depth of penetration depends on viability and that rays penetrate more deeply into living than into dead or moribund skin. These authors showed a penetration of 1.2 mm. through living tissue.

The Mode of Action of Ultraviolet Radiation: To understand how radiation brings about its effect in the cure of rickets one must have in mind two well known facts. First, that in the development of the disease there is the local phenomenon of failure or delay in calcification taking place at the epiphyses of bone, and, second, that there is the systemic one shown by a chemical change in the blood resulting in a diminution of the concentration of phosphate. Rickets, then, is something more than a disease localized in bone; it is regarded as a general metabolic disorder. Ultraviolet radiation raises the phosphate concentration in the blood and also promotes the deposition of lime salts in bone, through the agency of vitamin D which is synthesized in the skin. It is assumed that vitamin D, formed in the skin, is absorbed into the blood stream and carried to the bones. This theory is supported by the work of Hume, Lucas and Smith,²⁰ who showed that vitamin D could be absorbed through shaven areas of skin in rabbits, and more recently Lucas,²¹ in a series

7. Luce-Clayson, Ethel M.: The Therapeutic Value of Radiation. *Medicine* 8: 419 (Dec.) 1929.

8. Bills, C. E.: Physiology of Sterols, Including Vitamin D. *Physiol. Rev.* 15: 1 (Jan.) 1935; New Forms and Sources of Vitamin D. *J. A. M. A.* 108: 13 (Jan. 2) 1937.

9. Korenchevsky, V.: The Aetiology and Pathology of Rickets from an Experimental Point of View. *M. Res. Council, Special Report Series* 71, 1922.

10. Laurens, Henry: The Physiological Effects of Radiation. *Physiol. Rev.* 8: 91 (Jan.) 1928; Physiological Effects of Radiant Energy. *Monograph Series* 62, New York, Chemical Catalog Company, Inc., 1933, p. 297.

11. Clouse, Ruth Cowan: Vitamin D. *J. A. M. A.* 99: 215 (July 16), 301 (July 23) 1932.

12. Chick, Harriette: The Relation of Ultraviolet Light to Nutrition. *Lancet* 2: 325 (Aug. 13) 377 (Aug. 20) 1932.

13. Clark, Janet Howell: Ultraviolet Radiation in Relation to Health. *Nutrition Abstr. & Rev.* 3: 13 (July) 1933.

14. Mayer, Edgar: The Present Status of Light Therapy: Scientific and Practical Aspects. *J. A. M. A.* 98: 221 (Jan. 16) 1932.

15. Hess, A. F., and Weinstock, Mildred: The Antirachitic Value of Irradiated Cholesterol and Phytosterol. *J. Biol. Chem.* 64: 181 (May) 1925.

16. Hess, A. F., and Anderson, W. T.: The Antirachitic Activity of Monochromatic and Regional Ultraviolet Radiations. *J. A. M. A.* 99: 1222 (Oct. 8) 1927.

17. Sonne, Carl, and Rekling, Eigil: Behandlung experimenteller Rat-tenrachitis mit monochromatischem ultravioletten Licht. *Strahlentherapie* 2: 25: S52, 1927.

18. Clark, Janet: The Physiological Action of Light. *Physiol. Rev.* 2: 277 (April) 1922.

19. Anderson, W. T., and Macht, D. I.: The Penetration of Ultraviolet Rays into Live Animal Tissue. *Am. J. Physiol.* 86: 320 (Sept.) 1928.

20. Hume, E. M.; Lucas, N. S., and Smith, H. H.: On the Absorption of Vitamin D from the Skin. *Biochem. J.* 21: 362, 1927.

21. Lucas, N. S.: The Permeability of Human Epidermis to Ultraviolet Radiation. *Biochem. J.* 25: 57, 1931.

of ingenious *in vitro* experiments, has shown that sufficient ultraviolet of suitable wavelength can penetrate the epidermis. It therefore might activate provitamin D contained in the subepidermal capillaries. The mechanism whereby lime salts are actually laid down in the epiphyses is not clearly understood. There is a vast and complicated literature on this subject but the *modus operandi* is still obscure. Robison, in a series of important papers on calcification *in vitro*, has demonstrated the presence in the epiphyses of bone and in other tissues of phosphatase, a bone enzyme. The part played by this enzyme and vitamin D in the absence of calcification when rickets is present, or in the production of calcification during its cure, is still uncertain. It would seem, however, that the concentration of phosphate in the blood is the factor that controls the deposition of lime salts, for, clinically speaking, it is unusual to detect healing in the bones by x-rays until a rise in blood phosphate has been obtained.

Clinical.—Dorno²² in 1919 published a book giving results of measurements of the radiations from the sun in Davos at different times of the year. He showed by means of graphs great variations in the intensity of the ultraviolet of sunshine throughout the day, and also the greatly lessened intensity of ultraviolet on a day in January as compared with a day in July. Hess²³ made a graph showing the total hours of sunshine in New York, Berlin, Paris, Stockholm and Greenwich. He found that New York had the same number of total hours of sunshine in February and March as was recorded in London during June, July and August, but that rickets was prevalent in New York during February and March but underwent healing in London during the summer. Although children get outdoors more frequently in summer than in winter, this indicates that the quality and intensity of the protective radiations are of more importance than their duration.

This seasonal variation in the intensity of the antirachitic rays of the sun is of the utmost importance when one considers sunlight as a therapeutic agent. Studies of the seasonal incidence of rickets have shown very clearly that the peak of cases occurs during the winter months when the ultraviolet of sunlight is of lowest intensity; the converse is also true—the fewest number of cases occur in the summer months, and summer is the time when spontaneous healing is observed. Hess and Lundagen²⁴ demonstrated a seasonal tide of phosphates in the blood of infants in New York City which was shown very clearly to be a winter ebb and a summer flow. This occurred in spite of the fact that the infants were exposed to sunlight every fine day. In most of the infants some degree of rickets developed during the winter months in spite of excellent hygienic conditions. Hess regards a winter reduction of blood phosphate to be usual for infants living in the temperate zone.

The treatment of rickets with ultraviolet radiation is much to be recommended, since ultraviolet radiation is a potent and reliable specific in this disease. The radiations may be either those of sunlight or those obtained from artificial sources.

HELIOOTHERAPY

The difficulty of using heliotherapy in the climate of the northern part of the United States during the

winter is obvious from the preceding paragraph; the specific radiations are not available in sufficient intensity at a time when they are most needed, and, furthermore, the cold makes it difficult to expose much of the body surface to the direct action of the rays. Cold makes it also difficult to expose infants, however warmly clad, for a sufficient length of time. Hess²⁵ (p. 423) found the curative use of heliotherapy unsatisfactory during the entire months of January and February and the early part of March in New York City. It is clear from this that, during the winter, treatment should be given from artificial sources. The technic of using heliotherapy for infants has been described in practical detail by Hess²⁵ (p. 424) and is here quoted:

The technic of carrying out heliotherapy is as follows: At first the legs are exposed, the feet being protected by socks in the early spring and autumn. The first exposure should be for ten minutes and is to be regarded as a preliminary test to gauge the susceptibility of the individual. On each successive morning, the treatment may be prolonged five minutes until the infant is being exposed for one-half hour daily. On alternate days, the arms are treated in the same way—at the beginning for ten minutes and increasing the period as with the legs. As soon as weather permits, the trunk is exposed, the baby being clad merely in a diaper with the hands and feet covered. The head should always be protected with a light cap; the eyes may be shielded. Mothers and nurses are often greatly concerned lest the sunlight prove harmful to the eyes, but in my experience neither conjunctivitis nor any other injury to the eyes has resulted. As it is well known, blondes are in general more sensitive to ultraviolet rays than brunettes, but there are exceptions to this rule, so that care should always be exercised at the beginning of treatment. Every year I see one or more infants who have developed painful blisters or bullae on the face, as the result of exposure to the sun in the early spring. This burning can be prevented by applying a thin coating of oil or vaseline to the face, previous to placing the babies in the sunlight. It is not necessary to extend the exposure beyond one hour a day; in fact, in the warm weather, longer periods are contraindicated. In the summer, it is well to carry out heliotherapy during the early morning or late afternoon hours and not between 11 and 3 o'clock, when the heat is greatest. Following treatment, the infant should not become pale, nor should its rectal temperature rise. The results of heliotherapy in rickets are remarkable—the epiphyses rapidly calcify, the inorganic phosphorus in the blood increases, and there is marked improvement in the nutrition of the skin and the muscles. Benefit can be noted often in a fortnight.

IRRADIATION FROM ARTIFICIAL SOURCES

In using artificial sources of radiation it must of course be remembered that radiations are present of far shorter wavelengths than those emitted by the solar spectrum, and also that the antirachitic solar radiations, in these lamps, form a much higher percentage of the total rays. A rough estimate of the antirachitic radiations in sunlight in midsummer is 1.5 per cent of the total energy, while many artificial sources emit these rays in amounts as high as 20 per cent. The lamps most commonly used are the air-cooled mercury vapor and the carbon arc. The former emits far more of the short wavelength radiation than sunlight; the latter approximates more nearly in distribution to the radiations of sunlight but still transmits a much higher percentage of these rays. Dosage with these lamps is still highly empirical, but in general the dosage should induce a slight, but avoid a marked, erythema. Hess²⁵ (p. 425) recommends the following method:

For the average case, the child is irradiated every other day for a total period of four weeks. In a severe case, the time may have to be extended to eight or ten weeks. If treatment

22. Dorno, C.: *Physik der Sonnen und Himmelsstrahlung* Braunschweig, 1919.

23. Hess, A. F.: *The Ultraviolet Rays of the Sun*, J. A. M. A. 84: 1033 (April 4) 1925.

24. Hess, A. F., and Lundagen, M. A.: *A Seasonal Tide of Blood Phosphate in Infants*, J. A. M. A. 79: 2210 (Dec. 30) 1922.

25. Hess, A. F.: *Rickets, Osteomalacia, and Tetany*, Philadelphia, Lea & Febiger, 1929.

Peacock³⁷ has recently observed a fluorescence in the horny layer of the skin under the action of ultraviolet radiation. He points out that this is a protective mechanism against the destructive action of the rays, comparable to the fluorescence which occurs in the cornea and lens. Proliferation of the horny layer takes place at the same time as the formation of pigment; the latter protects the dermis from the action of radiation.

In general one may say that the reaction of the skin to ultraviolet radiation is designed mainly to protect the body from injurious effects. This fits in with the observations of dermatologists that the "weather-beaten" skin is not necessarily a healthy skin but one with a tendency to senile degeneration and the formation of keratoses. It is also probably extremely significant that skin cancers are rarely, if ever, seen in Negroes. The question should therefore be raised, in view of the general popularity of sun bathing and of irradiation from artificial sources, whether the overuse of radiation could predispose to cancer.

THE EXPERIMENTAL PRODUCTION OF SKIN TUMORS WITH ULTRAVIOLET RADIATION

Malignant tumors have been produced in rats and mice as a result of excessive exposure to ultraviolet radiation given either as sunlight or from artificial sources. Findlay³⁸ in 1928 exposed albino rats to radiation from an ultraviolet lamp at a distance of 18 inches (46 cm.) for one minute three times a week; in one out of a group of six animals a papilloma of the right ear developed and it died of senility after two years' treatment. Similar results were obtained with mice.³⁹ The exposures given by Findlay compared with those of later writers were of very short duration. Beard, Boggess and von Haam,⁴⁰ applying the technic of Roffo—i. e., twenty hours of ultraviolet radiation daily for one year—were able to produce sarcomas and carcinomas on the eyes, ears and heads in twelve out of a series of thirty adult rats. The lesions in these animals began to appear after two months of this treatment. Roffo⁴¹ found in his early studies that a rat tumor may contain more than twice as much cholesterol as that found in the host. He exposed rats to sunlight, and to radiations from a Hanau lamp for long periods; he analyzed skin for cholesterol and found high values in irradiated as compared with nonirradiated skin. He obtained neoplasms in a high percentage of his irradiated animals. He suggests that irradiation, by causing an accumulation of cholesterol in the skin, may prepare the soil for subsequent malignant growth. As a result of this work, a committee was appointed by the Academy of Medicine in Paris to verify the observations of Roffo. The committee confirmed the observations and in view of the potential dangers warned the general public against the abuse of sun baths. Beard and his associates,⁴⁰ however, point out that such a warning may be unnecessary on the ground that (a) the physiologic response of the rat to ultraviolet radiation is greater than that of man and (b) the massive exposures

necessary, even for the rat, to produce lesions, leave a wide margin of safety for man. It is also possible that the increased concentration of skin cholesterol produced by Roffo could be produced by other means, such as infections or irritants, and need not necessarily be regarded as a specific effect of radiation. Murray⁴² regards the production of tumors by ultraviolet radiation as merely the effect of an irritant and comparable to the effect of coal tar, x-rays, radium and animal parasites. If this is so, it would seem that, since such extraordinarily long and continuous exposures are required to produce cancer in an animal as sensitive as the rat, man is in no danger. But if it should be proved that the effect of ultraviolet radiation is more specific, if for example the carcinogenic hydrocarbons could be synthesized in the skin by exposure to radiation, then there would be more cause for alarm. Cook,⁴³ in a discussion of carcinogenic substances, mentions this as a possibility but hazards it only as a speculation to stimulate further research.

In general, one might conclude that experiments such as these indicate a possible but not a very probable danger for man. It is obvious that treatments given should remain within the physiologic limit of tolerance.

ULTRAVIOLET THERAPY AND ORAL DISEASE

A recent report⁴³ made at the request of the Council on Physical Therapy by the Council on Dental Therapeutics states that the claims for the efficacy of ultraviolet radiation in the treatment of oral disease, such as pain from various causes following the extraction of teeth, have not been substantiated.

GENERAL CONCLUSIONS AS TO THE VALUE OF ULTRAVIOLET THERAPY

The value of ultraviolet radiation in the prevention and cure of rickets and tetany is an accepted fact and has been proved indisputably to be both safe and specific if given under the conditions outlined.

In the treatment of fractures of bone, experimental evidence points to radiation as being of little if of any value.

In the treatment of tuberculosis, no claims for the specificity of ultraviolet radiation have yet been substantiated, though many authors still regard irradiation as a useful aid to other forms of treatment.

In the treatment of skin diseases of bacterial origin ultraviolet radiation may be of value, provided the organisms lie within the range to which the rays penetrate and are killed or attenuated by doses safe for the host. In other skin diseases, such as psoriasis, beneficial results might be due to the effect of radiation in producing hyperemia.

Skin tumors have been produced in rats and mice with prolonged exposure to ultraviolet radiation, but the exposures needed are so far outside the range in general use by man, either in sun bathing or in the use of rays from artificial sources, that a warning of danger seems unnecessary. A caution, however, to avoid the abuse of radiation therapy, since its effects on the skin are imperfectly understood, is, at this stage of our knowledge, completely justified. More research is undoubtedly needed on the question of the photodynamic effect of radiation on the skin with special reference to the possible synthesis, in the skin, of the carcinogenic hydrocarbons.

37. Peacock, P. R.: Skin Reaction to Ultraviolet Radiation, *Brit. J. Phys. Med.* 8: 173 (March) 1934.

38. Findlay, G. M.: Cutaneous Papillomata in the Rat Following Exposure to Ultraviolet Light, *Lancet* 1: 1229 (June 7) 1930.

39. Findlay, G. M.: Ultraviolet Light and Skin Cancer, *Lancet* 2: 1070 (Nov. 24) 1928.

40. Beard, H. H.; Boggess, T. S., and von Haam, Emmerich: Experimental Production of Malignant Tumors in the Albino Rat by Means of Ultraviolet Rays, *Am. J. Cancer* 27: 257 (June) 1936.

41. Roffo, A. H.: Heliotropism of Cholesterol in Relation to Skin Cancer, *Am. J. Cancer* 17: 42 (Jan.) 1933.

42. Murray, M. A.: Discussion on Experimental Production of Tumours, *Proc. Roy. Soc. London*, series B 113: 272, 1933.

43. Ultraviolet Therapy in Oral Diseases, editorial, *J. A. M. A.* 102: 135 (Jan. 13) 1934.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The articles will be continued from time to time in these columns. When completed, the series will be published in book form.—Ed.

BLOOD PRESERVATION TECHNIC

IN COLLABORATION WITH DR. ELIZABETH H. SCHIRMER

The blood bank¹ has now been in operation at the Cook County Hospital long enough for it to demonstrate its practical value as well as to reveal certain facts regarding the care that must be exercised in the preparation and administration of this blood, some of the limitations connected with its use, and some of the contraindications.

A new departure has been inaugurated in the direction of the securing and preserving of convalescents' serum. This can be done without sacrificing the red blood corpuscles, which may be separated from the plasma by sedimentation. They may then be suspended in sterile physiologic solution of sodium chloride and employed as "erythrocyte suspension," which we believe is especially indicated in cases of anemia in which there is no marked deficiency of plasma proteins and it should also be of special value in carbon monoxide poisoning. Nonspecific human serum is also separated from specimens deposited in the blood bank to be used for patients who have need of serum proteins but who are not deficient in red blood corpuscles as, for instance, in cases of extensive burns and of shock. The corpuscles separated from such plasma are also made into erythrocyte suspension. In this manner the blood bank supplies the following four varieties of blood preparations for infusion: whole blood, erythrocyte suspension, nonspecific human serum and convalescents' serum. In addition to this, pregnant women's blood (antepartum blood) is prepared for administration to premature infants.

THE DONOR'S FLASK

The prevention of transfusion reaction depends in part on the care used in the preparation of all glassware, tubing and needles. Scrupulous attention to the proper rinsing of the tubing with freshly distilled water and the proper cleansing of the needles and adapters, as well as the careful draining of all these are of importance. If any of these are permitted to remain wet for even a few hours, enough pyrogen may possibly be produced by microbial growth to produce a reaction.

Transparent amber rubber tubing is used because small clots of blood adhering to the sides of the tubing can be seen. New tubing is prepared by boiling for five minutes in a 0.1 per cent sodium hydroxide solution made with distilled water, so as to dissolve any

protein material in the tubing. The tubing is rinsed with distilled water and boiled for five minutes in another quantity of distilled water. Following this it is rinsed thoroughly in freshly distilled water and hung on a rack to drain. New rubber stoppers are prepared by boiling for one and one-half hours in a 5 per cent sodium hydroxide solution made with distilled water followed by a thorough rinsing with distilled water. They are then boiled in distilled water for two fifteen minute periods. The stoppers are finally dried by exposure to the air.

We employ donors' flasks of 1,000 cc. capacity which contain 70 cc. of 2.5 per cent sodium citrate in physiologic solution of sodium chloride. The rubber stopper carries two glass tubes (fig. 1). To one is attached a piece of rubber tubing that has a 1 inch glass tube attached to its free end, which is plugged with cotton so that it can be used as an aspirator by suction if it is necessary to expedite the flow of blood. The other glass tube has a rubber tube attached with a 2 inch number 13 needle by means of a number 1 Luer adapter. The needles and the glass aspirator are wrapped in gauze, packed in a gauze-cotton pad and attached to the neck of the flask by means of a rubber band. The tubing, including the neck of the flask, is then hooded by means of two layers of parchment paper and finally two layers of muslin. This is held in place by tape. This outfit is autoclaved for twenty minutes at 15 pounds pressure and it is kept in the Sterile Supplies Department until called for. The resident physician is given this outfit plus two sterile cotton plugged test tubes, which are called "pilot tubes," in which blood is collected for serologic examination

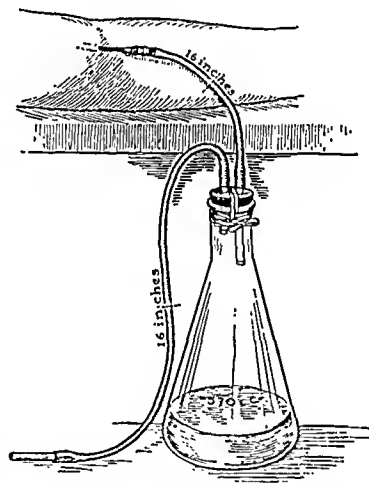


Fig. 1.—Donor's flask.

and for typing. The donor's flask carries a tag (fig. 2) the blanks of which should be conscientiously filled in, as some of the blood specimens contain specific antibodies that might be of life-saving value for patients suffering from infectious disease. It is desirable to have donors questioned regarding such diseases and when they had them. These facts should be recorded on the tag. All plasma containing curative antibodies should be separated from the corpuscles and the corpuscles used in erythrocyte suspension, while the plasma should be preserved for specific use (convalescents' serum).

OBTAINING THE BLOOD

The blood may be secured either from patients who need a therapeutic venesection, as in cases of cardiac decompensation or arterial hypertension, or from donors who should be in good health and present themselves at the hospital. The donor's stomach should be empty and he should be without alcoholic stimulant. The former condition is necessary to avoid lipemia (which

Dr. Schirmer is in charge of safety control, made originally possible by the Rebecca Muskat Memorial Fund.

1. Fantus, Bernard: The Therapy of the Cook County Hospital: Blood Preservation, J. A. M. A. 109:128 (July 10) 1937; Cook County's Blood Bank, Mod. Hosp. 50:57 (Jan.) 1938.

might make it impossible to read the Kahn test) and the latter to avoid a false negative Wassermann reaction. The donor is made to lie down on a table provided with an arm rest, and sufficient compression is applied to the arm, by means either of tourniquet or of sphygmomanometer cuff to constrict the veins partly without impeding the arterial circulation. The place of puncture is prepared by Mild Tincture of Iodine

Agitate flask gently but continuously while blood is being drawn to allow thorough mixing of anti-coagulant with blood.

DATE.....

WARD.....

SERVICE.....

DOCTOR.....

KAHN.....TYPE.....

REMARKS:

(Over)

NAME.....

ADDRESS.....

SEX.....AGE.....RACE.....

HAS DONOR HAD ?

Veneral Infection.....

Other Infections.....

Malaria.....

Trauma.....

Burns.....

Allergy to What..... (Over)

Fig. 2.—Tag attached to donor's flask.

followed by alcohol. To minimize the distress of the ordeal and the apprehension of the donor one should use a small amount of local anesthetic, e. g., procaine hydrochloride 1 per cent solution, injected endermically and paravenously. Before the blood aspirating needle is inserted a small amount of the citrate solution is allowed to run through the tubing and needle, as this facilitates the free flow of blood. The needle is then inserted cephalad into the vein and the flask is held about 18 inches below the level of the patient's arm. As soon as the flow of blood is established, the flask is gently but constantly rotated to insure thorough mixing of the citrate solution with the blood. If this is not done, clotting invariably occurs. When 500 cc. of blood² has been obtained the rubber tubing is pinched off by means of a finger near the flask. The needle is withdrawn and a portion of the blood that is in the tubing is allowed to run into each of the two pilot tubes by merely releasing the finger. The tubing is then wound round the neck of the flask and the needle is put in the gauze pad and fastened to the flask by means of the rubber band that held the tubing in place originally. The whole is then tied up with the original hood.

After all the information requested has been obtained from the donor and recorded on the tag, and the two pilot tubes have been properly labeled, the specimen is immediately brought to the blood preservation laboratory. If there is reason for delay the bottle must be placed in a refrigerator until it can be sent to the laboratory. As soon as the blood is deposited in the

blood bank, the service in which it has been collected is given credit for the amount of blood deposited (fig. 3).

CARE OF THE BLOOD IN THE LABORATORY

A reliable refrigerator is a most necessary item of equipment of this laboratory. It should be regulated so that the temperature averages about 2 C. and does not rise above 4 C. It should be roomy enough to accommodate at least five dozen specimens, because types AB and B are relatively rare³ (fig. 4).

We receive 4.5 per cent of type AB, 36.5 per cent of type A, 15 per cent of type B and 44 per cent of type O. Owing to the law of averages, there prevails the same distribution of the various blood types in specimens received from donors as are requested for recipients. We find that, owing to the scarcity most especially of type AB, about sixty specimens must be on hand to insure an adequate supply of this type. Owing to the fact that when blood is kept for more than ten days enough hemolysis occurs to cause reactions in some cases, blood should not be kept for more than this length of time. These facts limit the successful operation of a blood bank to a turnover of an average of six transfusions a day.

It is very simple to prepare the blood for storage. The rubber stopper with its tubing is removed; the mouth of the flask is flamed. It is then capped with two layers of parchment covered by a layer of muslin. These caps have been prepared in advance, having been wrapped in muslin together with a rubber band and sterilized in the usual manner. The blood is then placed in that portion of the refrigerator reserved for unclassified blood awaiting determination of the type and the result of the serologic and sterility tests.

TYPING AND TESTING THE BLOOD

The procedure used at this hospital is simple, but we believe quite satisfactory. A supply of type A (group 2) and B (group 3) serum is kept on hand.

BLOOD BANK ACCOUNT							
Wards		Services		Senior Interns Junior Interns			
Debit				Credit		Balance	
Date	Name	Am.		Name	Am.	Dr.	Cr.
7-14	H. S.	500				500	
7-14				A. C.	500		500
7-15	H. S.	500					500
7-15				J. S.	500		500
7-15				J. P.	500		1000
7-15				C. J.	500		500
7-16	C. J. (Schwarz-positive)	500					

Fig. 3.—Portion of a typical page of the blood bank book.

A drop of A is placed on the left hand end of the slide and a drop of type B on the right hand side. Some of the corpuscles of the blood to be typed are dislodged from the clot in the pilot tube by means of a wooden applicator and thoroughly mixed with the serum by means of the same applicator. The process is repeated for the other serum by means of another applicator. The results obtained are very clearcut and can be easily

3. The international classification is used. Type AB is type 1 of the Moss classification, type A is type 2, type B is type 3, and type O the same as type 4.

2. Not more than 500 cc.; otherwise there may not be enough citrate present to prevent clotting.

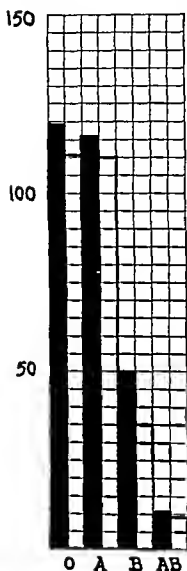
read macroscopically. The results should be read within five minutes. Rouleau formation or false agglutination from some other source is seldom encountered.

Cultures in dextrose broth fermentation tubes are made as a matter of routine on each specimen and incubated until the blood is called for, when they are examined and if contamination is present the blood is discarded. A rather gross determination of the sedimentation rate is made and the blood discarded if it forms a sediment very fast, as this suggests an unhealthy donor.

Serologic tests are reported every twenty-four hours. The Kahn test is run in a routine way and if it is positive a Wassermann test also is performed. The blood specimens are usually ready to be dispensed after forty-eight hours. No Kahn or Wassermann positive blood is used. The number of such positives received per month does not usually exceed 10 per cent. These specimens are then used by the Pathology Department for culture mediums. Although *Spirochaeta pallida*, according to the theory of some, is killed after five days' exposure to cold of the degree of the refrigerator, the evidence is not convincing enough to consider taking chances. The blood may possibly be used for persons known to be syphilitic but here too it is probably not worth taking a chance of inoculating the patient with a more virulent organism or with a type to which he has developed no immunity.

THE RECIPIENT'S FLASK

Fig. 4.—Ratio among the four types. Note the parallel between the number of specimens received (solid blocks) and the number dispensed (hollow blocks).



The flasks used for straining the blood are prepared by thoroughly rinsing with freshly distilled water and drying in a hot air oven. A 5 inch pyrex funnel is kept in place by means of a two-holed rubber stopper tied down by tape. A small glass tube is inserted into the other hole as an air vent (fig. 5). Genuine Swiss bolting cloth, No. 150 regulation mesh, is used for the filtration. When first received, the bolting cloth is prepared by boiling for two hours in 0.25 per cent hydrochloric acid, water lost by evaporation being replaced, and finally by boiling in two changes of distilled water for another two hours. Usually all the sizing is removed from the material by this procedure. However, if the cloth is still somewhat stiff the entire process should be repeated. The piece of silk should be sufficiently large to cover the funnel completely and allow for some cupping, because otherwise the first quantity of blood poured on the material will run over the sides and contaminate the specimen. The silk is held in place by a rubber band. The filter flask, which also serves as the dispensing flask, is then prepared for sterilization by two layers of sterile parchment paper and two layers of muslin covering the funnel and the entire neck of the flask, tied in place by tape.

PREPARING BLOOD FOR TRANSFUSION

The staff physician wishing to draw on his account in the blood bank should furnish the laboratory with about

5 cc. of the patient's blood for typing. This blood should be collected without any anticoagulant as for the serologic tests. A statement should accompany the request as to the condition demanding the infusion or, better still, a declaration of the variety of preserved blood desired; e. g. whole blood, erythrocyte suspension, nonspecific serum or convalescents' serum (what disease).



Fig. 5.—Recipient's flask with sterile funnel and bolting cloth filter and cap to keep it sterile.

After the type of blood has been determined, a blood specimen of that type is chosen from the flasks of blood on hand. Cross matching is then done to assure complete compatibility with the blood of the recipient. The pilot tube from the donor's specimen is used. All cross matching is done with a very dilute suspension of corpuscles and is made by inserting an ordinary applicator stick into the blood clot. The corpuscles which adhere to the stick are then shaken off into approximately 5 cc. of physiologic solution of sodium chloride. The suspension should be just turbid. After such suspensions have been made from both the patient's tube and the donor's pilot tube, these tubes are centrifuged to separate the serum. The slides prepared for agglutination tests are gently tilted back and forth to facilitate agglutination. They are placed under Petri dishes (kept moist by means of wet filter paper) for about twenty minutes before the final reading by means of the microscope.

The compatible blood is examined for evidence of deterioration. A record is made as to whether the supernatant plasma is fatty (we have dispensed it so far without any ill results) and the blood is also examined for the presence of clots. The blood is gently mixed and a specimen of about 5 cc. withdrawn under sterile conditions for evidence of hemolysis that could not be seen before mixing. This test tube is centrifuged and kept in the refrigerator for one week. This is done in order to determine whether a reaction that might occur was due to hemolysis. The rest of the blood is strained through the bolting cloth and an equal quantity of physiologic solution of sodium chloride is added to the strained blood. The funnel is removed, and the flask is capped by means of two layers of sterile parchment paper covered by muslin. These are the same type of cap used on the donor's flasks and a stock of sterile caps is kept ready for use. The flask is labeled with the recipient's name, ward, date and type of blood. It is

replaced in the refrigerator and the patient's physician is notified that the blood is ready.

The blood should be called for promptly after notification. If it is not called for within twenty-four hours it is used either for another patient or for some other purpose. All pilot tubes are kept for forty-eight hours

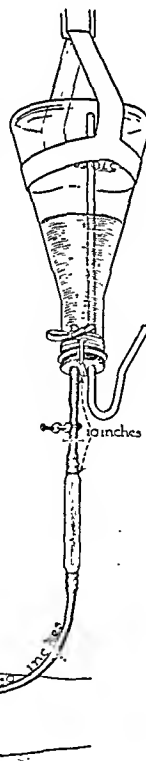


Fig. 6.—Recipient's flask in use.

after the blood has been called for in case a reaction develops and it is desirable to recheck the type and cross matching, or in the event that the patient needs another transfusion within that time. In cases of emergency, blood can be prepared ready for transfusion within thirty minutes from the time the recipient's tube reaches the laboratory.

When the blood is called for, a phleboclysis set is dispensed with it. The phleboclysis set for blood transfusions differs from the ordinary phleboclysis set in that all the rubber tubing is of the transparent para rubber type. The set consists of a padded arm board with straps and buckles; three sterile towels; a two-holed rubber stopper fitted with glass tubing, one of which reaches to within one-half inch of the bottom of the flask and acts as an air vent, and a short glass tube to which a length of the amber tubing is attached for transmission of the blood to the needle.

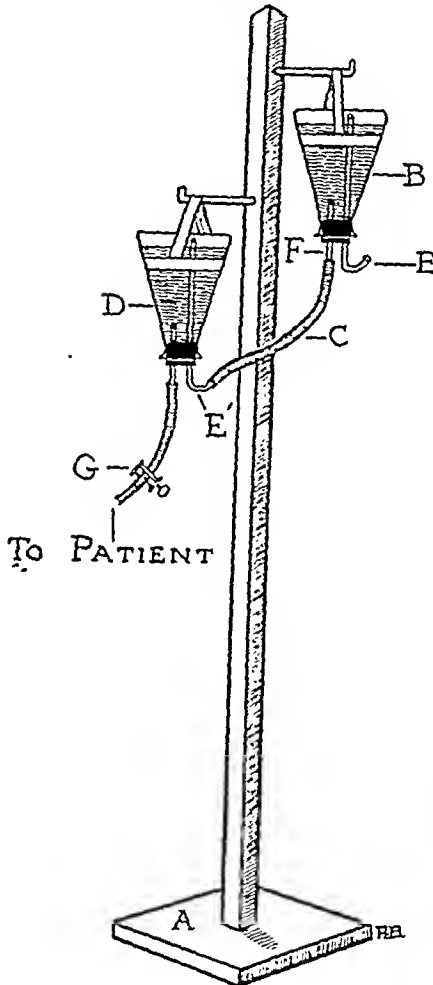


Fig. 7.—Diagram of tandem flask.

lint from the towels. Three swabs, a tourniquet, and tape with which to hang the flask and a tape used for binding the stopper to the flask are also enclosed in this package. These articles are packed in two layers of flannel and sterilized for twenty minutes under 15 pounds pressure. Figure 6 shows the manner in which the recipient's flask is set up for the infusion.

ADMINISTRATION OF BLOOD

The blood is warmed in a water bath of not more than 105 F. just before it is given. Overheating the blood is much more dangerous than giving it, by the drop method, without preheating. It is gently mixed, not shaken, since agitation causes hemolysis. When a patient is getting phleboclysis—and it is wise to precede blood transfusion by saline phleboclysis—all that needs be done is to transfer the stopper and connections from one flask to the other. The needle need

not be disturbed at all. The flow is regulated to about 40 to 60 drops per minute and the patient carefully watched during the entire time it takes to give the blood, usually from two and a half to three hours, for any evidence of reaction. The house physician should himself watch the patient for the first twenty minutes at least, because if there is to be a violent reaction it will usually occur within this time.

The "tandem flask" (fig. 7), suggested to us by Sidney A. Diamond, is a useful means of preventing the clotting of blood when the outflow from the needle stops for even a short time, as occurs when the flask is permitted to run dry. When the upper flask is empty it should be replaced by another flask at E. The lower flask should never be permitted to run dry as long as the phleboclysis is to be continued. It is thus possible to administer fluid through one vein for a long period of time, and blood transfusion may be introduced from time to time as required in the course of other parenteral fluid therapy.

REACTIONS

Patients getting transfusions should be watched for signs of restlessness; anxiety; generalized painful tingling, especially in the lumbar region; a sensation of fullness in the head; precordial fullness; dyspnea; marked flushing of the face; sudden rise in pulse rate and temperature; signs of shock, such as a cold clammy skin or rapid feeble pulse; nausea, and vomiting. These are indications that the transfusion should be stopped immediately.

Some patients seem to tolerate the transfusion well, but after an hour or later a delayed reaction sets in. There may be a severe chill and a sharp rise in temperature, which may be followed by hemoglobinuria and oliguria. Sodium bicarbonate administered to alkalinize the urine is advisable at the first evidence of the occurrence of hemolysis. Jaundice, if caused by the transfusion is usually not evident until about eight to ten hours after the blood has been given. Reactions of an allergic type occur occasionally and are usually manifested by an urticarial eruption and an eosinophilia and are relieved by epinephrine. Because such reactions can often be traced to persons hypersensitive to foods, they can usually be prevented by having the donor fast before the blood is taken.

We have succeeded, by the means described, in practically eliminating almost all reactions due to preservation technic. The reactions now occurring are chiefly "autogenous reactions," i. e., those due to the patient's condition. They are of three types: (1) chill and fever, occurring most especially in patients with a tendency to chill and fever, as in cases of sepsis. These might be prevented or minimized by the preliminary administration of acetylsalicylic acid (0.6 Gm.). 2. Allergic reactions due either to passive transfer or to active allergy in the recipient. These may be relieved by epinephrine. 3. Hemolysis reactions, which are probably due to subtypes of blood not as yet tested for or so low a hemolysis titer that it is not detected in the period of observation taken for cross matching. In the prevention of these, alkali therapy might be of use. In the presence of hemolytic jaundice, severe reactions are very likely to follow blood transfusion.

RECORD KEEPING

We keep a daily journal of the names of the individuals who received blood, the name of their donors and the group. A strict accounting of the amount of

blood deposited and withdrawn is kept for each service. The service is given credit for the blood as soon as it is deposited in the bank, but if it should be Wassermann positive or badly clotted this credit is withdrawn. Every intern is notified of such debit to his account. A daily inventory is kept of the number of types of blood on hand, as well as those unclassified. A daily record is made on the patients who had transfusions. Short abstracts of their histories are kept for purposes of developing statistics.

Council on Pharmacy and Chemistry

MAP AND MYOSTON NOT ACCEPTABLE FOR N. N. R.

MAP AND MYOSTON WERE PRESENTED FOR THE COUNCIL'S CONSIDERATION BY DR. GEORGE HENNING, CHEMISCHE UND PHARMZEUTISCHE FABRIK, BERLIN. THE NAMES ARE COINED PROPRIETARY DESIGNATIONS. MAP IS THE NAME USED TO DESIGNATE THE FIRM'S CRYSTALLINE MYO-ADENOSINE PHOSPHORIC ACID, WHICH IS STATED TO BE MARKETED IN AMPULES CONTAINING THE ACID IN THE FORM OF SODIUM SALT. MYOSTON IS STATED TO BE "A SKELETO-MUSCLE EXTRACT, STANDARDIZED FOR MYO-ADENOSINE PHOSPHORIC ACID . . . 1 CC. CONTAINS 0.0025 GM. OF MYOADENOSINE PHOSPHORIC ACID."

THE GERMAN MANUFACTURER SUBMITTED SOME ADVERTISING AND REPRINTS IN GERMAN AND A CATALOGUE IN ENGLISH, ON THE COVER OF WHICH "PHARMACEUTICAL PRODUCTS LIMITED, LONDON," IS NAMED AS THE DISTRIBUTOR OF "HENNING" PRODUCTS. THAT FIRM, HOWEVER, HAS HAD NO COMMUNICATION WITH THE COUNCIL. SO FAR AS THE COUNCIL KNOWS THE FIRM HAS NO AMERICAN DISTRIBUTOR.

IN ADVERTISING SUBMITTED BY THE GERMAN FIRM THE FOLLOWING "INDICATIONS" FOR THE USE OF THE PRODUCTS ARE GIVEN:

ANGINA PECTORIS AND KINDRED CARDIO-VASCULAR DISEASES, CORONARY SCLEROSIS HYPERTONIA, CARDIAC ASTHMA, DYSPNOEA IN INSUFFICIENCY OF THE HEART MUSCLE, VASOMOTOR DISORDERS OF THE CEREBRAL CIRCULATORY SYSTEM, INTERMITTENT LAMENESS, ANGIOSPASMATA, GANGRENE, ECZEMA.

THE COUNCIL'S REFEREE ASKED A COLLEAGUE TO INVESTIGATE THE STATUS OF THESE PREPARATIONS. THE ASSOCIATE PREPARED THE FOLLOWING REPORT:

PAUL NICHOLAS LEECH, Secretary.

Myoston and Map

THE USE OF THE SO-CALLED HEART HORMONES IN CLINICAL MEDICINE

Haberlandt¹ in 1927 prepared an extract of heart muscle which had widespread effects on the circulatory system. He believed that the active principle was a hormone, and the extract was later sold for use in clinical medicine under the name "Hormocardiol." Fahrenkamp² concluded from his experiences with patients that Hormocardiol was of benefit in the treatment of angina pectoris.

Extracts of various tissues were found subsequently to have similar pharmacologic actions. Among these were Lacarnol, prepared from striated muscle (Fahrenkamp and Schneider³), Eutonon, an extract of liver (Zuelzer⁴), Kallikrein, an insulin-free extract of pancreatic tissue (Frey⁵), Myoston, prepared from an extract of striated muscle (Schwarzmann⁶), a bouillon made from beef muscle (Hochrein and Keller⁷), Reflexan, prepared from liver extract (Tiemann⁸), and Angiolsin, adeno-

sinephosphoric acid prepared from yeast (Ganter⁹). Frey¹⁰ found in the urine a substance which had the same properties as his insulin-free extract of the pancreas. He found further that after extirpation of the pancreas the urinary excretion of the active principle fell but that the output in these animals could be increased by the administration of insulin. A cyst of the pancreas was found to contain large amounts of the active substance.

The pharmacologic actions of all these preparations have been found to be practically the same (Hochrein and Keller,⁷ Schretzenmayr¹¹). Following their administration there is a dilatation of the peripheral arterioles with a fall in the blood pressure, and an increased flow of blood through the coronary vessels. The blood flow through the heart muscle is increased in spite of an unchanged or lowered systemic blood pressure. The action of Myoston in dilating the arterioles was found by Schretzenmayr¹¹ to be qualitatively and quantitatively similar to that of pure adenosinephosphoric acid. However, toward the end of the phase of dilatation a slight increase in the tonus of the vessels is elicited by Myoston but not by adenosinephosphoric acid. An increased blood flow through the coronary arteries following the use of Map has been demonstrated by Dietrick and Schwiégk.¹² Ostern and Parnas¹³ determined the amounts of the adenosine derivatives in Myoston and found that each cubic centimeter contained 4.7 mg. of adenosinephosphoric acid and 0.45 mg. of adenosine. Similarly, Joos¹⁴ reports that Myoston as prepared at present contains constant amounts of adenosinephosphoric acid, equivalent to the amounts stated by the manufacturers, although in earlier preparations Joos¹⁵ found the amounts to vary considerably. Parnas¹⁶ states that Map prepared by the manufacturers of Myoston also contains constant amounts of adenosinephosphoric acid. Zipf and Giese¹⁷ compared the actions of adenosine, adenylic acid and Myoston and demonstrated that with all three substances the effects appeared in two phases. The first phase was of short duration, during which there was a slowing of the blood flow through the arterioles, capillaries and venules with no change in the size of the vessels. This phase corresponded to the period of lowered systemic blood pressure. The second phase was of longer duration. The blood flow in the vessels was increased and there was a widening of the capillary bed, an improvement in venous return, an increase in the aortic volume and a return increase in arterial blood pressure. While the action of several of the extracts can possibly be referred to much simpler known substances, as adenosine and its derivatives, as Dale¹⁸ suggests, Felix and Putzer-Reyberg¹⁹ and Lange²⁰ have discovered in the extracts of various organs a hypotensive substance which differed from adenosine, histamine and choline. Zipf²¹ found in fresh extracts of all organs an "adenosine-like" substance which differed from histamine, acetylcholine and the "Lange-Felix substance." In hyperemia, from a variety of causes, the amounts were increased. Whether the effects of Myoston can be ascribed to any other substance in addition to adenosinephos-

9. Ganter, G.: Zur Therapie stenokardischer Beschwerden mit Adenosinephosphorsäure, München. med. Wchnschr. 79: 1884 (Nov. 18) 1932.

10. Frey, E. K.: Kreislaufformen und innere Sekretion, München. med. Wchnschr. 76: 1951 (Nov. 22) 1929.

11. Schretzenmayr, A.: Ueber die Wirkung der sogenannten Kreislaufformone auf der Gefasstonus, Ztschr. f. Kreislaufforschung 24: 225 (April 15) 1932.

12. Dietrick, S., and Schwiégk, H.: Neue Anschauungen über Pathogenese und Therapie der Angina pectoris, Deutsche med. Wchnschr. 60: 967-972 (June 29) 1934.

13. Ostern, P., and Parnas, J. K.: Ueber die Auswertung von Adenosinderivaten am überlebenden Froschherz, Biochem. Ztschr. 248: 389-397 (May 26) 1932.

14. Joos, G.: Die Standardisierung handelsüblicher sogenannter kreislaufwirksamer Organextrakte, Klin. Wchnschr. 12: 777-778 (May 20) 1933.

15. Joos, G.: Der Gehalt handelsüblicher sog. Kreislaufwirksamer Organextrakte an Adenin-nucleotiden und Adenin-nucleosid, Klin. Wchnschr. 11: 1906-1909 (Nov. 12) 1932.

16. Parnas, J. K., quoted by Joos.

17. Zipf, K., and Giese, W.: Ueber die Wirkung adenosinartiger Stoffe und einiger Organextrakte auf die Kapillaren, Arch. f. exper. Path. u. Pharmacol. 171: 111-118, 1933.

18. Dale, Sir H.: Ueber Kreislaufwirkungen körpereigener Stoffe, Verhandl. d. deutsch. Gesellsch. f. inn. Med. 44: 17-29, 1932.

19. Felix, K., and von Putzer-Reyberg, A.: Physiologisch-chemische Analyse der blutdrucksenkenden Wirkung von Organextrakten, Arch. f. exper. Path. u. Pharmacol. 164: 402-416, 1932.

20. Lange, F.: Ueber die blutdrucksenkende Wirkung gewisser Organextrakte, Arch. f. exper. Path. u. Pharmacol. 164: 417-440, 1932.

21. Zipf, K.: Die Bedeutung der "adenosinartigen" Stoffe für physiologische und pathologische Kreislaufvorgänge, Arch. f. exper. Path. u. Pharmacol. 167: 60-61, 1932.

1. Haberlandt: Das Hormon der Herzwirkung, Vienna and Berlin. Urban und Schwarzenberg, 1927.

2. Fahrenkamp, K.: Klinische Beobachtungen mit dem Herzhormonpräparat "Hormocardiol" nach Haberlandt, Med. Klin. 9: 338 (March 1) 1929.

3. Fahrenkamp, K., and Schneider, H.: Vergleichende Untersuchungen mit einem als Hormocardiol bezeichneten Herzhormonpräparat und einem neuartigen Muskelextrakt, Med. Klin. 26: 318 (Feb. 28) 1930.

4. Zuelzer, G.: Zum gegenwärtigen Stand der Herzhormonfrage, Med. Klin. 24: 571-574 (April 13) 1928.

5. Frey, E. K.: Ueber ein neues inneres Sekret des Pankreas, das Kreislaufformon Kallikrein, und seine Verwendung, Med. Klin. 32: 1205 (Aug. 8) 1930.

6. Schwarzmann, J. S.: Ein neuer Weg in der Therapie der Angina pectoris; Vorläufige Mitteilung, München. med. Wchnschr. 76: 1329-1798 (Aug. 9) 1929.

7. Hochrein, M., and Keller, C. J.: Die Beeinflussung des Kreislaufes durch Organextrakte (sogenannte Kreislaufformone), Arch. f. exper. Path. u. Pharmacol. 159: 438-451, 1931.

8. Tiemann: Ueber ein wirksames Prinzip der Organextrakte für die Behandlung von Gefäßspasmen (Reflexan), München. med. Wchnschr. 81: 58-59 (Jan. 12) 1934.

phoric acid is not known. Schretzenmayr¹¹ believed that Myoston contained a sympathetic-stimulating compound in addition to the adenosinephosphoric acid. Wolf and Heinsen²² studied the effect of Myoston and pure adenosinephosphoric acid on the blood pressure of two patients. The effects were found to be similar except for a late rise in the blood pressure of one patient receiving Myoston.

It appears that most of the actions of Myoston are similar to those demonstrated for adenosine and adenylic acid by Drury and Szent-Györgyi.²³ These investigators observed an increased flow of blood through the coronary arteries, and a fall in blood pressure that was independent of vagal sectioning or atropinization. The fall in blood pressure was considered to be due in part to a dilatation of the arterial vessels and in part to a slowing of the heart rate. The effects of adenosine and adenylic acid on the mammalian heart were found to be qualitatively similar. Hartmann²⁴ observed the electrocardiographic changes in patients and normal subjects receiving adenosinephosphoric acid. Following the injection of the substance there was an immediate tachycardia for a few seconds to one and a half minutes, then a bradycardia lasting from two to ten minutes. There was a transitory flattening of the waves, especially of the T wave. In cardiac insufficiency the conduction time was increased. Hartmann could find no evidence of an improvement in the force of the heart muscle following the administration of adenosinephosphoric acid and considered the use of this substance in heart disease to be contraindicated.

Numerous workers have employed Myoston and other tissue extracts in the treatment of patients with angina pectoris, Raynaud's disease, hypertension, cardiac insufficiency and various vasomotor disturbances. Thus, J. S. Schwarzmänn⁶ reported good results with Myoston in angina pectoris. In a series of seventy-three patients with angina pectoris of varying severity he observed negative results in only two. The series included patients who had pain only on exertion, and others in status anginosus.²⁵ From his experiences with the use of Myoston in over 1,300 patients with a variety of conditions, he concluded that Myoston is a valuable therapeutic measure.²⁶ Bagdassarian and Turketaub²⁷ confirmed Schwarzmänn's observations in nine patients with angina pectoris.

Similar results have been reported with the use of other tissue extracts. Fahrenkamp² noted beneficial results with Hormocardiol in angina pectoris. Later he showed that similar effects could be obtained with Lacarnol, a muscle extract (Fahrenkamp and Schneider³). Zuelzer,⁴ using Eutonon, an extract of the liver, reported improvement in angina pectoris and cardiac insufficiency. Beneficial results with Kallikrein have been reported in angina pectoris (Frey⁵), Raynaud's disease (E. Leschke,²⁸ Schwarzkopf,²⁸ Atanasof²⁸), intermittent claudication (Mosenthal,²⁸ Atanasof²⁸), essential hypertension (Leschke²⁸), circulatory disturbances of the menopause (von Schubert²⁸) and diabetic gangrene (Schwarzkopf²⁸). Wolffe, Findlay and Dessen,²⁹ using their own extract of the pancreas in twenty cases of angina pectoris, obtained symptomatic relief in eleven cases. Six patients had partial relief and three patients were not benefited. Singer³⁰ treated 171 patients with intermittent claudication, hypertension, angina pectoris and vasomotor phenomena with various tissue extracts. Of the twenty-seven patients who received Myoston, ten had angina pectoris,

twelve myocardial insufficiency and four hypertension with vasomotor disturbance. He was unable to observe any satisfactory result with Myoston in any of these cases. One patient developed a coronary occlusion while under the treatment with Myoston. In two patients receiving muscle extract and digitalis simultaneously, Fahrenkamp and Schneider³ noted the occurrence of severe anginal attacks. When digitalis was discontinued, no attack followed the administration of the muscle extract. Daron³¹ used Myoston in seven cases of eclampsia and reports that it benefited in overcoming the hypertension and convulsions in this condition. Pocza³² obtained good results with Myoston in angina pectoris but observed no benefit in hypertension. Korach,³³ Fleischmann³⁴ and Dietrick and Schwegk³⁵ consider Myoston to be of value in the treatment of angina pectoris. On the other hand, Morawitz³⁵ could find no beneficial effect whatever in angina pectoris when tissue extracts of various types were used. Hochrein and Keller,⁷ in Morawitz's clinic, studied the effects of different extracts in forty cases. In those patients who had organic disease, no therapeutic results were obtained. In patients with vessel spasm there was variable improvement, the positive and negative results being about equal in number. Their experience with tissue extracts in conditions associated with organic disease of the vessels is similar to that of Leschke²⁸ and Atanasof.²⁸ Honey, Ritchie and Thomson³⁶ used yeast adenosine in patients and concluded that it was not a useful therapeutic preparation for the treatment of heart disease. In his investigations, Martini³⁷ graded the pain in angina pectoris on a mathematical basis and estimated the relative probability of the severity of the attacks. Using this method he found Myoston, Eutonon and Lacarnol to be of no therapeutic value in angina pectoris. On the other hand, Lyter³⁸ considers the careful use of tissue extracts such as Padutin and Lacarnol a distinct advance in the treatment of angina pectoris. Lyter treated twenty-one patients. Seventeen of these patients had pain on activity and four had angina even while at rest. Of the first group, thirteen patients were completely relieved of the angina; none of the second group had any benefit whatever. He concludes that, in angina pectoris of effort without physical, roentgenographic or electrocardiographic evidence of a cardiovascular lesion, these substances are of definite value. In three patients with intermittent claudication, M. S. Schwarzmänn²⁶ observed considerable improvement following the use of Myoston. Barker, Brown and Roth⁴⁰ noted definite lengthening of the time necessary to produce intermittent claudication during a standard claudication test in 92 per cent of a series of fifty-five cases of thrombo-angiitis obliterans and arteriosclerosis after the intramuscular injection of pancreatic tissue extract. Similar effects were noted in all of eight cases of thrombo-angiitis obliterans after the intramuscular administration of Myoston. In only one of five patients with arteriosclerosis was there a change. The results with Map and adenosine were less striking than with Myoston. These workers believe that this effect of Myoston and Map is not due to vasodilatation but to some direct action on the contracting ischemic muscles.

The results of most of the investigators are difficult to evaluate, as little or no information is given regarding the controls

22. Wolf, H. J., and Heinsen, H. A.: *Ztschr. f. klin. Med.* 126: 616 (April 11), 127: 1 (May 24) 1934.

23. Drury, A. N., and Szent-Györgyi, A.: *Physiological Activity of Adenine Compounds with Especial Reference to Their Action upon the Mammalian Heart*, *J. Physiol.* 68: 213-237 (Nov.) 1929.

24. Hartmann, W.: *Die Wirkung der Adenosinphosphorsäure im Elektrokardiogramm*, *Ztschr. f. klin. Med.* 121: 424-446 (Aug. 3) 1932.

25. Schwarzmänn, J. S.: *Weitere Beobachtungen über die Wirkung meines Muskelextraktes bei Angina pectoris und einigen anderen Zuständen*, München, med. Wchnschr. 77: 759-760 (May 2) 1930.

26. Schwarzmänn, J.: *Referat über Kreislaufwirkungen körpereigener Muskulatur*, *Path. u. Pharmakol.* 167: 56-58, 1932.

27. Bagdassarian, I., and Turketaub, M.: *Ueber den Einfluss des Muskelextraktes auf das Herz*, München, med. Wchnschr. 77: 1314-1316 (Aug. 1) 1930.

28. *Berichten der Berliner Medizinischen Gesellschaft, Med. Klin.* 26: 1205 (Aug. 8) 1930.

29. Wolffe, J. B.; Findlay, D., and Dessen, E.: *Treatment of Angina Pectoris with Tissue Vasodilator Extract; Preliminary Report*, *Ann. Int. Med.* 5: 625-642 (Nov.) 1931.

30. Singer, R.: *Die praktischen Ergebnisse der "Herz-Hormon"-Therapie*, *Wien. klin. Wchnschr.* 44: 39-42 (Jan. 9) 1931.

31. Daron, D.: *Ueber die Anwendung des Myostons (Myols) bei der Behandlung der Eklampsie*, *Wien. klin. Wchnschr.* 45: 1444 (Nov. 18) 1932.

32. Pocza, N.: *Erfahrungen bei der Behandlung von Herz und Gefäßkranken mit sogenannten Herzhormonen*, *Deutsche med. Wchnschr.* 57: 756-757 (May 1) 1931.

33. Korach: *Erfahrungen über die kausale Herzhormontherapie mit dem Muskelextrakt "Myoston" bei Angina pectoris und essentieller Hypertonie*, München, med. Wchnschr. 78: 473-474 (March 20) 1931.

34. Fleischmann, P.: *Ueber die Behandlung von Kreislaufstörungen mit Organ- und Muskelextrakten einleitendes Referat*, *Deutsche med. Wchnschr.* 58: 121-123 (Jan. 22) 1932.

35. Morawitz, P.: *Aussprache, Verhandl. d. deutsch. Gesellsch. f. inn. Med.* 44: 102, 1932.

36. Honey, R. M.; Ritchie, W. T., and Thomson, W. A. R.: *Action of Adenosine upon the Human Heart*, *Quart. J. Med.* 23: 485-489 (July) 1930.

37. Martini, P.: *Die klinische Untersuchung der sog. Herzhormone bei Angina pectoris*, *Deutsche med. Wchnschr.* 58: 569 (April 8) 1932.

38. Lyter, J. C.: *Recent Cardiovascular Therapy*, *J. Missouri M. A.* 32: 138-141 (April) 1933.

39. Schwarzmänn, M. S.: *Die Behandlung der Claudicatio intermittens mit Muskelextrakt; vorläufige Mitteilung*, München, med. Wchnschr. 77: 758-759 (May 2) 1930.

40. Barker, N. W.; Brown, G. E., and Roth, G. M.: *Effect of Tissue Extracts on Muscle Pains of Ischemic Origin (Intermittent Claudication)*, *Am. J. M. Sc.* 189: 36-44 (Jan.) 1935.

that were employed. Use of adequate foreperiods as controls, and comparison with other therapeutic measures, such as glyceryl trinitrate in the cases of angina pectoris, apparently have not been made. Furthermore, most of the reports contain no case histories or protocols. Martini³⁷ discusses the difficulty of evaluating therapeutic procedures in conditions in which the manifestations of the disease are largely subjective; for example, angina pectoris as contrasted with such conditions as diabetes. Martini believes that the therapeutic procedures must be controlled by the injection or administration of other substances similar in appearance, and that the patient should be unaware when the substance to be investigated is given.

There is adequate evidence that Myoston, Map and adenosinephosphoric acid have definite and widespread effects on the circulatory system. However, the data available at present do not offer evidence of the value of these substances as therapeutic agents. It is likely that carefully controlled observations in the future will show that these substances may be of some value in the treatment of patients with angina pectoris, intermittent claudication and vasomotor disturbances not associated with organic disease. Awaiting such evidence it is suggested that Myoston and Map be not accepted by the Council.

After consideration of the foregoing report, the Council came to the conclusion that there is not sufficient evidence to warrant acceptance of Map and Myoston. In view of the lack of evidence for the claims of therapeutic value, the Council deferred consideration of the names and composition of the products.

The Council declared Map and Myoston unacceptable for inclusion in New and Nonofficial Remedies because evidence for their therapeutic value is lacking, and authorized publication of the foregoing report.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

EPHEDRINE HEMIHYDRATE (See New and Nonofficial Remedies, 1938, p. 226).

Ephedrine Alkaloid, Hemihydrate-Abbott.—A brand of ephedrine hemihydrate-N. N. R.

Manufactured by the Abbott Laboratories, North Chicago, Ill. No U. S. patent or trademark.

DIGITALIS (See New and Nonofficial Remedies, 1938, p. 186).

Wyeth's Suppositories Digitalis Leaf. Each suppository contains 1 U. S. P. unit in an ointment base consisting of cocoa butter and beeswax.

Prepared by John Wyeth & Brother, Inc., Philadelphia.

PROSTIGMINE.—Pharmacologic experiments indicate that the prostigmine component of prostigmine compounds possesses some of the properties of the closely allied drug physostigmine. Its actions and uses, therefore, are similar to those of physostigmine, over which it has the advantage of being more stable. Apparently, it is as active as physostigmine in stimulating intestinal peristalsis and has a similar but somewhat diminished myotic activity. There is no satisfactory evidence that the symptoms produced by toxic doses of prostigmine salts are any less severe than those produced by comparable doses of physostigmine or its salts. This latter fact becomes especially important when it is considered that prostigmine preparations are used by subcutaneous and intramuscular injection, since the prostigmine component is from four to six times as toxic as physostigmine when injected subcutaneously in the rabbit. Atropine is the antidote to prostigmine. Prostigmine preparations have been used experimentally for the prevention of atony of the intestinal and bladder musculature, and for the symptomatic control of myasthenia gravis. Their use for the prevention and treatment of intestinal and bladder atony is based on activity as a vagotonic agent; their anti-curare-like action is the basis of application in the symptomatic treatment of myasthenia gravis. The drug is also credited with mild laxative action but its use solely for that purpose is not advisable.

Prostigmine is available only in the form of its salts.

PROSTIGMINE BROMIDE.—The dimethylcarbamic ester of 3-hydroxyphenyl-trimethyl-ammonium bromide.— $(CH_3)_2N.CO.O.C_6H_4.N(CH_3)_3Br$.

Actions and Uses.—See Prostigmine. Prostigmine bromide is used for the oral treatment of myasthenia gravis. The bromide is used for the oral tablet form as it is comparatively non-hygroscopic.

Dosage.—0.015 Gm., three times daily. If necessary, the dose may be cautiously increased to 0.03 Gm., three times daily.

Manufactured by Hoffmann-La Roche, Inc., Nutley, N. J. U. S. patent 1,905,990 (April 25, 1933; expires 1950). U. S. trademark 293,889.

Prostigmin Bromide Tablets, 0.015 Gm.

Prostigmine bromide occurs as a white, crystalline, odorless powder, possessing a bitter taste, freely soluble in water; the aqueous solution is neutral to litmus. Prostigmine bromide melts with decomposition near 167°C.

Dissolve about 0.25 Gm. of prostigmine bromide in 10 cc. of water, add 1 cc. of diluted hydrochloric acid and 1 cc. of barium chloride solution: no immediate turbidity is produced (sulfate).

Dry about 0.3 Gm. of prostigmine bromide, accurately weighed, for twenty-four hours at 100°C.: the loss in weight does not exceed 2 per cent. Incinerate about 0.3 Gm. of prostigmine bromide, accurately weighed, in a platinum crucible: the residue does not exceed 0.1 per cent. Place 0.3 Gm. of prostigmine bromide, accurately weighed, in a beaker, add 150 cc. of water, followed by the addition of 10 cc. of nitric acid and 25 cc. of silver nitrate solution, subsequently boil with continuous stirring and allow to cool in a dark place. Collect the precipitate of silver chloride on a Gooch crucible, wash with a diluted nitric acid and water, followed by alcohol and ether; finally dry to constant weight at 105°C.: the amount of bromide calculated from silver bromide found corresponds to not less than 26.2 per cent nor more than 26.9 per cent when calculated to the dried substance.

PROSTIGMINE METHYLSULFATE.—The dimethylcarbamic ester of 3-hydroxy-phenyl-trimethyl-ammonium methylsulfate.— $(CH_3)_2N.CO.O.C_6H_4.N(CH_3)_3SO_3CH_3$.

Actions and Uses.—See Prostigmine.

Dosage.—Prevention of postoperative distention: small doses of the 1:4,000 solution are administered subcutaneously or intramuscularly at frequent intervals. Injections are begun twenty-four hours before the operation if feasible, otherwise as soon as possible, and repeated in 1 cc. doses every four to six hours until the second or third postoperative day. Treatment of postoperative distention: usually one or two ampules of the 1:2,000 solution, as required, are administered subcutaneously or intramuscularly. Experimental use in the treatment of myasthenia gravis: only one ampule of the 1:2,000 solution is administered initially, the size and interval of the subsequent doses to be given as indicated by the degree and duration of the response to the initial dose. The course of treatment usually consists of from one to four ampules (from 0.5 to 2 mg. of prostigmine methylsulfate).

Manufactured by Hoffmann-La Roche, Inc., Nutley, N. J. U. S. patent 1,905,990 (April 25, 1933; expires 1950). U. S. trademark 293,889.

Ampuls Prostigmin Methylsulfate 1:2,000, 1 cc.

Ampuls Prostigmin Methylsulfate 1:4,000, 1 cc.

Prostigmine methylsulfate occurs as an odorless, white crystalline powder, having a bitter taste, freely soluble in water; the aqueous solution is neutral to litmus. It melts at from 142.5 to 145°C.

To 0.001 Gm. of prostigmine in a porcelain dish add 2 cc. of water, followed by the addition of 0.5 cc. of a 40 per cent solution of sodium hydroxide and evaporate to dryness on a water bath; place the residue in a small test tube, immerse in an oil bath, heat quickly to 250°C., and retain temperature for thirty seconds; remove from bath, cool, add about 0.5 cc. of water, place on ice and finally add 1 cc. of diazobenzene sulfonic acid: a cherry-red coloration results.

Dissolve 0.5 Gm. of prostigmine methylsulfate in 25 cc. of water and divide into two separate portions: to one portion add 1 cc. of diluted nitric acid and 1 cc. of silver nitrate solution: no immediate opalescence results (chloride); to the other portion add 1 cc. of diluted hydrochloric acid and 1 cc. of barium chloride solution: no immediate turbidity results (sulfate).

Dry about 0.5 Gm. of prostigmine methylsulfate, accurately weighed, to constant weight at 100°C.: the loss in weight does not exceed 1 per cent. Incinerate about 0.5 Gm. of prostigmine methylsulfate, accurately weighed, in a platinum crucible: the residue does not exceed 0.1 per cent. Place about 0.35 Gm. of prostigmine methylsulfate, accurately weighed, in a 500 cc. Kjeldahl flask and determine the nitrogen content according to the official method described in Official and Tentative Methods of Analysis of the Association of Official Agricultural Chemists, third edition, page 20, chapter 2, paragraph 22: the percentage of nitrogen corresponds to not less than 8.1 nor more than 8.5 when calculated to the dried substance. Transfer about 0.35 Gm. of prostigmine methylsulfate, accurately weighed, to a 500 cc. Kjeldahl flask, add 250 cc. of water, followed by 50 cc. of a 10 per cent solution of potassium hydroxide and distill the mixture as in an ordinary nitrogen determination, collecting the ammonia liberated in 25 cc. of tenth-normal hydrochloric acid solution, titrating the excess of acid with tenth-normal sodium hydroxide solution, using methyl red as an indicator: the amount of ammonia calculated as dimethylamine corresponds to not less than 11.8 per cent, nor more than 12.1 per cent when calculated to the dried substance.

SODIUM THIOSULFATE (See New and Nonofficial Remedies, 1938, p. 450).

Ampoules Sodium Thiosulfate-Abbott, 0.5 Gm., 5 cc.

Prepared by the Abbott Laboratories, North Chicago, Ill.

Ampoules Sodium Thiosulfate-Abbott, 1.0 Gm., 10 cc.

Prepared by the Abbott Laboratories, North Chicago, Ill.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - "Medic, Chicago"

Subscription price - - - - Seven dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, JULY 23, 1938

THE NEW FEDERAL FOOD AND DRUG ACT AT LAST

On June 25 the President approved an act passed by Congress officially designated as the Federal Food, Drug, and Cosmetic Act.¹ The act does not become wholly effective until one year after the date of its approval. In the meantime the Food and Drugs Act of 1906, as amended, remains in force. The prolonged period of transition from one act to the other is necessary to enable importers, producers, manufacturers, distributors and venders of foods, drugs, diagnostic and therapeutic devices and cosmetics to adjust their commodities and methods of doing business to the new order. During this period also the Secretary of Agriculture will be able to adapt the administrative machinery of the Department of Agriculture to the discharge of the new duties imposed on him.

The new act, like the Food and Drugs Act of 1906, as amended, which it is to replace, is necessarily limited in its scope to interstate and foreign commerce and commerce within jurisdictions, such as the District of Columbia, under the exclusive control of the federal government. It specifically brings instruments, apparatus and contrivances intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease or designed to affect any bodily structure or function under federal supervision and control for the first time. It covers also cosmetics, which the act defines as articles, other than soap, "intended to be rubbed, poured, sprinkled, or sprayed on, introduced into, or otherwise applied to the human body or any part thereof for cleansing, beautifying, promoting attractiveness, or altering the appearance." Soaps that are represented as being of service in the cure, mitigation, treatment or prevention of disease come, however, within those provisions of the new act that relate to drugs.

The federal control of interstate and foreign commerce in foods, authorized by the new act, is in some ways more thorough than the control heretofore in force. The Secretary of Agriculture is authorized by

the new act to establish standards for all kinds of foods, with a few relatively unimportant exceptions. That provision of the Food and Drugs Act of 1906 which gave a wide and more or less unregulated license to foods sold under distinctive names will be repealed when the new act goes into full effect. Thereafter, foods for which standards and definitions of identity have not been prescribed by the Secretary of Agriculture must be labeled to show common or usual names. In case they are fabricated from two or more ingredients, the common or usual name of each such ingredient must be supplied, except that the individual spices, flavorings and colorings need not be named. The Secretary is authorized, however, to establish by regulations, under certain conditions, exceptions to such required disclosure. In the case of foods represented as having value for special dietary uses the Secretary may require labels to contain such information concerning their vitamin, mineral and other dietary properties as he deems necessary to inform purchasers fully of their value for the uses for which they are being exploited. Finally, if the distribution in interstate or foreign commerce of any class of food may, by reason of contamination with micro-organisms during the manufacture, processing or packing thereof in any locality, be injurious to health and its injurious nature cannot be adequately determined after such food has entered interstate commerce, the Secretary may by regulations prohibit the distribution of such food from establishments in that locality, except such as have applied for and received permits and operate under the supervision and control of the Department of Agriculture.

The most noteworthy advance made by the new Federal Food, Drug, and Cosmetic Act in the field of drug control has reference to the introduction of new drugs. The act forbids the introduction, or the delivery for introduction, into interstate or foreign commerce of any new drug, unless an application has been submitted to the Secretary of Agriculture and has become effective. The scope of this prohibition is manifest when it is recalled that the term "drug" is defined by the act to mean all articles intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease, except instruments, apparatus and contrivances intended for such purposes, and that the term "new drug" is defined by the act to include any drug, not heretofore subject to the Food and Drugs Act of 1906, as amended, which is not generally recognized among experts, qualified by scientific training and experience to evaluate the safety of drugs, as safe for use under the conditions prescribed, recommended or suggested on the label. The Secretary is authorized, however, to exempt from this prohibition drugs intended solely for investigational use by experts qualified by scientific training and experience to investigate the safety of drugs. Except as authorized by the provisions of the act with reference to new drugs, the new act leaves to private initiative

1. Public No. 717, 75th Congress.

and enterprise the fixing of drug standards, as it was under the Food and Drugs Act of 1906, but it adds the American Institute of Homeopathy to the corporations that may engage in such activities. It authorizes, too, all the corporations empowered to fix drug standards to change them at pleasure, by means of supplements to the recognized books of standards, the U. S. Pharmacopeia, the Homeopathic Pharmacopeia of the United States and the National Formulary. The new act specifically provides, however, that it shall not be construed as in any way affecting, modifying, repealing or superseding the provisions of the virus, serum and toxin act of July 1, 1902,² which places the supervision and control of the manufacture and distribution of viruses, serums, toxins and analogous products under the control of the United States Public Health Service.

Any drug—and again it is important to bear in mind the statutory definition of the term “drug,” already stated—that is not designated solely by a name recognized in the United States Pharmacopeia, the Homeopathic Pharmacopeia of the United States or the National Formulary, or in a supplement to one or the other of them, must be labeled to show its common or usual name, unless it is dispensed on the prescription of a physician. In the case of a drug made of two or more ingredients, the label must show the common or usual name of each active ingredient, including the quantity, kind and proportion of any alcohol. The name and quantity or proportion of each of the following ingredients, whether active or not, must be shown if they are present: “bromides, ether, chloroform, acetanilid, acetphenetidin, amidopyrine, antipyrine, atropine, hyoscine, hyoscyamine, arsenic, digitalis, digitalis glucosides, mercury, ouabain, strophanthin, strychnine, thyroid,” or any derivative or preparation of any such substances. The disclosures with respect to these ingredients are not required in the case of drugs dispensed on the bona fide prescriptions of physicians, dentists and veterinarians. Any drug that is not dispensed on a written prescription of a physician, dentist or veterinarian and that contains “alpha eucaine, barbituric acid, beta-eucaine, bromal, cannabis, carbromal, chloral, coca, cocaine, codeine, heroin, marihuana, morphine, opium, paraldehyde, peyote or sulphonmethane,” or that contains any chemical derivative of any such substance, which derivative the Secretary of Agriculture has found to be habit forming and has so designated, must show on its label the name, quantity and percentage of such substance or derivative and in juxtaposition therewith the statement “Warning—May be habit forming.” These provisions as to habit forming drugs apply to drugs dispensed on prescriptions of physicians, dentists and veterinarians, as well as to drugs otherwise dispensed, unless the prescription is marked by the writer as not refillable or its refilling is prohibited by law.

Drugs and diagnostic and therapeutic devices, including those sold on the basis of the prescriptions of physi-

cians, dentists and veterinarians, must be labeled with adequate directions for use and bear such adequate warnings against use in those pathologic conditions or by children where their use may be dangerous to health, or against unsafe dosage or methods or duration of administration or application, in such manner and form as are necessary for the protection of the users, except in those cases in which the Secretary of Agriculture has by regulation exempted the drug or device from such requirement. The provisions of the new act with respect to instruments, apparatus and contrivances intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease and to affect the structure or any function of the body of man or other animals, designated by the act as “devices,” are a distinct advance on anything in the Food and Drugs Act of 1906. They fall far short, however, of what had been hoped for, as they neither fix standards for devices nor authorize any agency of the government to fix such standards. The provisions of the law with respect to the labeling of devices will afford the public some protection against fraud and danger, but the absence of legal standards or even a requirement that manufacturers, distributors and venders indicate on their own devices the potency claimed for them is unfortunate.

The bringing of cosmetics in interstate and foreign commerce under the supervision of the federal government seems tardy enough, in view of the extent to which cosmetics are used and of their possibilities for fraud and bodily harm. The provisions of the act with respect to purity and labeling of cosmetics are rather general. Poisonous or deleterious ingredients are forbidden but only when it can be shown that they may render the cosmetic injurious to the users under the conditions of use prescribed in the labeling or under such conditions as are customary or usual. Coal tar hair dyes are expressly permitted, except dyes for eye-lashes or eyebrows, if cautionary statements are printed on the labels. No ingredient of any kind need be disclosed on the label. A “cosmetic,” however, within the meaning of the law is a substance intended only for cleansing, beautifying, promoting attractiveness or altering the appearance of the user, which obviously gives the term a much broader meaning than that popularly given to it. Any toilet article represented as having the power of preventing, mitigating or curing disease is, however, a “drug” within the meaning of the law and subject to regulation as a drug.

The new act provides an elaborate system of procedure looking toward its efficient execution and enforcement and lays down what seem to be heavy penalties. The operations of the new act will be observed and studied with care. Such loopholes as may be discovered should be promptly closed by effective amendments. It should not be necessary again to propose the passage of an entirely new act, with the resultant labor, delay and confusion that have been incident to the passage of the act that has just become

2. U. S. Code, 1934 ed., title 42, chapter 4.

a law. A law cannot be effective without an adequate force of administrators, assistants and efficient equipment; these cannot be provided without money. In the last analysis, then, responsibility for the successful administration of this act still rests on the appropriating power which is the Congress.

THE AMERICAN MEDICAL DIRECTORY

Fresh from the press comes the fifteenth edition, dated 1938, of the American Medical Directory. It is a work embracing 2,565 pages and it stands supreme in its field as a storehouse of useful, accurate information. Among the data included are a complete analysis of the American Medical Association with a statement of its officers, its constitution and by-laws, and the various annual sessions which it has held. There is a detailed comparative statement of the numbers of physicians in the United States, its dependencies and Canada in all the previous editions of the Directory. The present edition lists 188,916 names, or 5,604 more than were in the Fourteenth Edition, issued in 1936. More than 100,000 changes have been made in the intervening two years, including 74,399 changes of address, the addition of 13,811 new physicians, and the removal of the names of 8,008 who have died.

Medical schools are listed, together with the essentials of an acceptable school and a concentrated history of all the medical schools in the country as well as graduate medical schools and foreign medical schools. There is an account of the National Board of Medical Examiners and a description of its work.

The most important new feature is a complete statement regarding the twelve examining boards in the specialties, the essentials for approved examining boards, and a brief history of all the boards now functioning. The Directory designates more than 12,000 physicians who have been certified by the boards.

Repeated in this edition are the list of hospitals approved for training interns developed by the Council on Medical Education and Hospitals, together with the hospitals approved for residencies in the specialties, also the medical libraries, and the medical periodicals available in this country. After a listing of the officers of the Army, the Navy, the United States Public Health Service, the Veterans' Administration and the Indian Field Service, there is a complete directory of national and interstate societies, and then classified lists of the members of special societies in various groups. Next come all the detailed data concerning each of the individual states, including late figures as to population, number of counties, the physicians, membership in the state medical society, the medical practice act of the state, health officers, officers of medical societies, and a directory of hospitals, sanatoriums and related institutions. Then for each state there is a listing by town or city of each physician, presenting at the same time all the data that have usually been included in the

American Medical Directory and in addition a statement as to whether or not the physician has qualified before the examining board of any of the medical specialties. There is also a list of American physicians who have located temporarily in foreign countries, a list of those whose addresses are unknown, and finally a complete index of physicians.

By the inclusion of a considerable number of advertisements of medical manufacturers and institutions, together with a complete buyer's guide, the Directory becomes as well a purchasing index for all those interested in the purchase of medical supplies. The possession of this directory by any physician means that he has immediately available at his finger tips all the essential factual data concerning medicine and its practice in the United States ready for consultation with ease and facility and in a manner which no other similar work provides.

Current Comment

THE ALLEGED INCREASE IN INSANITY

The rapid increase of patients in mental hospitals throughout the United States has often been used as an instrument to forward certain social, economic, eugenic and medical objectives. The crude figures alone have usually been cited; hence a recent brief but careful analysis of the situation by Jacob¹ is important. He presents the increase in resident patients in the state hospitals of Georgia, Illinois, Alabama and the United States as a whole for the decade 1923-1932 in terms of gross numbers, standard rates (the number of patients per hundred thousand of general population) and an index based on the standard rates with 1923 as the base year. In each of the areas studied, the number of hospitalized insane patients increased steadily from 1923 to 1932. There was an increase in the numbers and standard rates of first admissions in Illinois and the United States and a decrease in Georgia and Alabama. The number of readmissions per hundred resident patients increased in Alabama, Illinois and the United States but decreased in Georgia during the decade. At the same time the capacity of the hospitals increased almost as much in the six years from 1927 to 1933 as did the number of resident patients during the decade, although their capacity was overtaxed in all the areas except Illinois in the year 1932. The rate of discharges and deaths per hundred resident patients decreased and the median duration of residence prior to death was greatly lengthened during the decade. These data, according to Jacob, reveal no conclusive evidence that the alleged increase in incidence of insanity is real in fact. It seems evident that the increase in the population of the state hospitals studied is due in part at least to the increased capacity of the hospitals, the increased rates of readmission, the lower rates of discharge and death and the increased duration of residence prior to death.

1. Jacob, J. S.: A Note on the Alleged Increase in Insanity. *J. Abnorm. & Social Psychol.* 33: 390 (July) 1938.

MASTER IN THE HOUSE OF MEDICINE

The cartoon on this page is taken from the current issue of *Hygeia*, the Health Magazine, published by the American Medical Association. It epitomizes the gathering lines of cleavage in current debates regarding the future of the practice of medicine in this country. Medicine, once practiced almost exclusively by the physician, is now an activity in which hundreds of thousands participate, giving their full time to the prevention of disease

and the diagnosis and treatment of the sick. Only the physician in this group is entitled by training, by experience and by law to assume responsibility for the sick patient, yet the great numbers of persons concerned and the vested interests involved would in some instances wish to intervene in the situation. The question as to whether or not the hospital shall dictate the terms of medical practice is being pointed as an issue by the difficulty of establishing satisfactory circumstances under which the roentgenologist, the pathologist and the anesthetist may function without losing professional status. There are those who insist that the dominance of the hospital in this field is para-

mount and that doctors who are associated with hospitals will realize that it is to their interest to support the hospital's point of view. Another group now looming large in its numbers and in its influence in this country is the social worker group. While they are concerned with the circumstances surrounding the delivery of medical service, including environmental and financial competence, they would in many instances make professional service subservient to environmental factors. As these lines of cleavage in opinion develop, there seems to be but one answer to this question—that is

the answer which *Hygeia* makes in its cartoon and in the leading editorial about that cartoon in the August issue. There can be but one master in the house of medicine, and that is the physician.

THE STUDENT SECTION

In this issue of *THE JOURNAL* appears for the first time a section devoted wholly to the interests of the medical student; it will, however, be concerned not only

with the educational interests, training and welfare of medical students but also with problems affecting interns and residents in hospitals. This section of *THE JOURNAL* has been established after careful consideration by the Board of Trustees of the relationship of the student and the intern to the medical profession. The students, interns and residents of today are the practicing physicians of tomorrow. Unless they are familiar with the problems which concern the practicing physician and with the policies and principles established by the organized medical profession of the United States, they can hardly be expected to participate actively in medical affairs immediately after en-

tering into the organized medical profession. The student section as now planned will appear once each month in the fourth issue of the month. While much of the material for the student section is developed by educators and those interested in the problems of medical education, opportunity will be given to students, interns and residents to be heard as to their views on problems which intimately concern them. Material submitted for this department of *THE JOURNAL* needs merely to be addressed to the headquarters of the Association, with a letter indicating that it is submitted particularly for the student section.



There can be but one master in the house of medicine, and that is the physician.

THE FAMILY DOCTOR

The family doctor has always been heralded the adviser and counselor of his patients on many subjects. He has always been the trusted confidant. The *Saturday Evening Post*, in an article by J. P. McEvoy, makes the following note in its record of the development of Shirley Temple:

"All of Shirley's earnings are put in a trust fund for her benefit when she grows up. I am making enough myself, so I don't have to touch any of it." And then Mrs. Temple continued: "You know, Bernstein wanted to handle Shirley. He came over here to the house with Mrs. Coogan one day, and walked up and down the living room waving a check for half a million dollars in my face. He told me he had just got this for Jackie and we ought to let him handle Shirley, because we didn't know anything about the picture business and we would certainly be cheated if we didn't let him take care of us."

"Practically every agent in town had been after us, and we didn't know which way to turn. Bernstein talked and talked until we were dizzy, and then, in desperation, we called up our family doctor and asked him to come over and advise us, because he was the only professional man we knew. He has been advising us ever since."

"You have no agent?" I was incredulous. Every one has an agent in Hollywood, even the agents.

"No agent."

I made a rapid calculation. Ten per cent of the Temple earnings saved. Nice going for a family doctor.

"Of course, we have a lawyer now who helps us, but weren't we lucky to have such a sensible doctor?"

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Another Human Death from Rabies.—While fishing recently, a man in Fresno County took a fancy to a stray dog and paid a boy to catch the dog for him. The boy and his father were bitten, also the dog's fancier. On the trip home the animal escaped and further history was not obtainable. No prophylactic treatment was received by any of those bitten. Pain developed in the hand of the dog fancier at the site of the bite, and by the next day he was ill. He was hospitalized May 8 and died the next day. The incubation period was sixty-eight days.

Annual Seminar on Physical Therapy.—The sixth annual seminar of the Western section of the American Congress of Physical Therapy and the Pacific Physical Therapy Association was held in Los Angeles, June 9-10. The following, among others, spoke:

Mr. Howard A. Carter, Secretary, Council on Physical Therapy, American Medical Association, Chicago, Measuring Power Output of Diathermy Machine.

Dr. Henry W. Meyerding, Rochester, Minn., Dupuytren's Contracture.

Dr. John S. Coulter, Chicago, Heating Effect of Short Wave Diathermy.

Drs. Rodney F. Atsatt and Neville T. Ussher, Santa Barbara, Atrophic Arthritis—A Logical Regimen for Treatment.

Dr. George H. Kress was toastmaster at the banquet session when Dr. Meyerding spoke on "Volkmann's Ischemic Contracture" and Dr. Coulter, on "The Use and Abuse of Physical Therapy in Industrial Surgery."

COLORADO

Graduate Training in Psychiatry.—The Commonwealth Fund has renewed its fellowships for graduate training in psychiatry at the University of Colorado Psychopathic Hospital, Denver. The appropriation covers four fellowships of three years' duration, two beginning in the fall of 1938 and two in the fall of 1939. Dr. Howard P. Gilbert, who completed an internship at St. Luke's Hospital, New York, in 1933-1935, and during 1937-1938 has been working at the Neurological department of the University of Chicago, who is completing

ing an internship at the University of California Hospital, San Francisco, 1937-1938, have been appointed to begin their fellowships in September.

DELAWARE

Hospital News.—The new \$100,000 Mary B. Thompson wing of the Beebe Hospital was dedicated at Lewes May 28. It is a three story structure, with operating and x-ray rooms on the first floor, nurses' quarters on the second and twenty hospitalization rooms on the third. Dr. Pascal Brooke Bland, Philadelphia, was the speaker. Mrs. Henry B. Thompson, Greenville, made the presentation address.

Death from Spotted Fever.—The *New York Times* reported the death July 3 of James H. Hughes Jr., Ridgeway Road, Wilmington, from Rocky Mountain spotted fever. Hughes was said to have been stricken June 20 on his farm. It is believed that ticks burrowed under his skin as he brushed them off his dogs after a hunting trip June 17. This death was said to be the third in the region within a month.

GEORGIA

Health Unit Revived.—Dr. Edward S. Armstrong, Augusta, has been appointed health commissioner of Crisp County. The unit is becoming active after having been suspended several years ago, it was stated.

Personal.—Dr. William B. Buckner, Moss Point, Miss., has been elected health commissioner of Dougherty County with headquarters in Albany.—Dr. Roy W. McGee, Ben Hill, who has been appointed director of health of Fulton County, will study for one year, it is reported, at the School of Hygiene and Public Health of Johns Hopkins University before taking over the position.

Society News.—The Fulton County Medical Society was addressed June 16 by Dr. Dewey T. Nabors on hematuria.—Dr. Joseph R. Gay, Homerville, discussed tetanus before the Ware County Medical Society in Waycross May 4.—Dr. Abraham J. Davis, Waynesboro, was elected president of the recently organized Southeast Georgia Public Health Association.—Dr. James C. Metts, Savannah, read a paper entitled "Hereditary Cerebellar Ataxia" before the Georgia Medical Society May 10.

IDAHO

University News.—The library of about 1,200 books of the late Dr. Charles L. Gritman, Moscow, was recently given to the University of Idaho by Mrs. Gritman. Dr. Gritman died in 1933.

Plague Infection.—According to *Public Health Reports*, plague infection was proved in tissue obtained from a ground squirrel shot May 25 two miles south of Bern, in five fleas collected from one ground squirrel shot May 25 two miles south of Bern, and in eighty fleas collected from sixty-seven ground squirrels shot May 27 from five to eight miles southeast of Montpelier.

INDIANA

Society News.—Dr. Jewett V. Reed, Indianapolis, discussed "The Proper Care of Highway Accidents" before the Delaware Blackford County Medical Society in Muncie May 17.—At a meeting of the Montgomery County Medical Society in Crawfordsville, June 16, Dr. Oliver W. Greer, Indianapolis, spoke on the care of crippled children.—The Tippecanoe County Medical Society was addressed in Lafayette June 21 by Dr. Frank P. Hunter, Lafayette, on "The Blood Cells and Disease."—At a meeting of the Miami County Medical Society in Peru, June 24, Drs. Don D. Bowers and Edwin N. Kime, Indianapolis, discussed "Irradiation and Surgery in Cancer" and "Management of Readily Accessible Neoplasms in the Office and in the Outpatient Department."

KANSAS

Courses in Obstetrics and Pediatrics.—A series of graduate courses in obstetrics and pediatrics was held in south central and southeast Kansas June 27-July 22 under the auspices of the state board of health and financed by social security funds. The towns selected for lectures include Great Bend, Emporia, Pratt, El Dorado, Wellington, Independence, Hutchinson, Pittsburg, McPherson and Iola. The speakers are Drs. Henry C. Hesselstine and William J. Dieckmann, department of obstetrics, University of Chicago; Julian D. Boyd, associate professor of pediatrics, State University of Iowa College of Medicine; Frank E. Whitacre and Carl P. Huber, department of gynecology and obstetrics, University of Chicago.

LOUISIANA

Course in Pediatrics.—A refresher course in pediatrics was conducted in Marksville, June 13-17, by Dr. Cecil O. Lorio, Baton Rouge, under the auspices of the committees on medical education and pediatric courses of the state medical society and the bureau of parish health administration and the division of maternal and child health of the state board of health. According to the *New Orleans Medical and Surgical Journal*, it is planned to give similar courses within each councilor district.

MINNESOTA

Commonwealth Fund Aids Graduate Education.—A grant of \$37,000 to be disbursed over a period of five years has been given to the University of Minnesota by the Commonwealth Fund, New York, to be used for graduate medical education. The fund will provide a series of advanced courses in at least five branches of medicine, it was announced.

Society News.—The Redwood-Brown County Medical Society was addressed in New Ulm May 4 by Drs. J. Grafton Love and Bayard T. Horton, Rochester, on "Diagnosis and Treatment of Head Injuries" and "Histamine Treatment of Migraine Headaches" respectively.—A recent meeting of the Wright County Medical Society was addressed in Delano by Drs. Herbert M. N. Wynne and Robert I. Rizer, Minneapolis, on the endocrines.—At a meeting of the Hennepin County Medical Society in Minneapolis May 2 Dr. Frederick A. Willius, Rochester, discussed "A Less Common Manifestation of Rheumatic Heart Disease."

MISSISSIPPI

Health Department Activities.—Dr. Harry N. Waggoner, formerly of Clarksdale, has been appointed health officer of Holmes County, succeeding Dr. George W. Mast, Lexington, who has been named to a similar position in Washington County. Newspapers report that a new unit was to open in Alcorn County July 1. Dr. Ray H. Biggs, New Albany, has been appointed health officer of Madison County, succeeding Dr. Cecil C. Smith, who has resigned on account of ill health; headquarters are at Canton.

Society News.—Dr. Hubert Lowry Rush, Meridian, was elected president of the Mississippi State Hospital Association at its recent annual meeting, succeeding Dr. Augustus Street, Vicksburg; other officers are Drs. Gilruth Darrington, Yazoo City, vice president, succeeding Dr. James P. Wall, Jackson, and Leon S. Lippincott, Vicksburg, who was reelected secretary.—The Commonwealth Fund of New York sponsored a course in pediatrics June 20-22 in Greenville under the supervision of Dr. George M. Lyon, Huntington, W. Va.

MONTANA

Plague Infection.—According to *Public Health Reports*, plague infection was recently found in 284 fleas collected from eighty-eight *Citellus elegans* ground squirrels shot nine miles northwest of West Yellowstone, Gallatin County.

NEBRASKA

Personal.—Dr. Gerald V. Caughlan, Council Bluffs, Iowa, has been appointed assistant clinical professor of urology at Creighton University School of Medicine, Omaha. Dr. Caughlan graduated from Creighton in 1913.—Dr. and Mrs. Andrew E. Stuart, Cedar Bluffs, were honored with a public celebration on the occasion of their golden wedding anniversary June 12.—Dr. Arthur E. Cook, Randolph, was the guest of honor at a meeting of the Dakota, Dixon, Cedar, Thurston and Wayne Counties Medical Society in Randolph June 7 in recognition of the completion of forty years of practice.

NEW YORK

Dr. Bedell Awarded Prize.—Dr. Arthur J. Bedell, Albany, received the Lucien Howe Prize of the Medical Society of the State of New York at the recent annual meeting in New York. The award was made for a paper on "Diseases of the Macula."

Society News.—The Aesculapian Club, said to be the second oldest medical group in Buffalo, celebrated its fortieth anniversary with a banquet May 19. Dr. Burton T. Simpson was toastmaster. Dr. Lester S. Knapp was elected president and Dr. Frank J. Montrose secretary.—Drs. Calvus E. Richards and Josef A. Kindwall addressed the Ontario County Medical Society, Clifton Springs, July 12, on "Sulfanilamide Therapy" and "A Cooperative Study of a Psychosis by Patient and Doctor" respectively.—Dr. Clarence E. de la Chapelle, New York, addressed the Herkimer County Medical Society in May on "Circulatory Disturbances in Metabolic Diseases."

New York City

Department of Facial Palsy.—New York Polyclinic Medical School and Hospital has established a special department of facial palsy for teaching purposes with clinics every Thursday. Dr. Thomas G. Tickle is in charge.

Hospital News.—The cornerstone of a new \$750,000 outpatient department building of the Hospital for Joint Diseases was laid June 6. The new unit will be four stories high and is designed to care for 800 ambulatory patients daily.—The cornerstone was laid June 19 for a \$250,000 addition to the Jewish Sanitarium and Hospital for Chronic Diseases in Brooklyn.

WPA Builds Baby Health Stations.—Ground was broken June 9 for the seventh of a series of child health stations under construction by the WPA for the New York City Department of Health in a program of consolidating, centralizing and relocating these stations for families of low income. The sites were selected by the department's committee on neighborhood health development in areas where it is believed a definite need will exist for many years. Each station will contain examination rooms, a weighing and dressing room, a conference and a demonstration room.

Personal.—Dr. Florence Rena Sabin, member of the Rockefeller Institute for Medical Research, received the honorary degree of doctor of science from Russell Sage College, Troy, at the recent commencement.—Dr. Joseph Tenopir was elected director of surgery at the Kings County Hospital to succeed Dr. Edwin H. Fiske, who resigned to devote more time to writing and to work at the Holy Family Hospital, where he is attending surgeon.—The University of Rochester conferred the honorary degree of doctor of science on Dr. Thomas M. Rivers, director of the Hospital of the Rockefeller Institute for Medical Research, at its eighty-eighth annual commencement June 20.

Illegal Practitioners Sentenced.—The state board of medical examiners recently reported that one Max Riedel was convicted June 24 of practicing medicine without a license and fined \$250. In default of the fine he is to serve three months in the workhouse. In addition he was sentenced to three months in the workhouse with execution suspended during good behavior.—Raymond Sabourin, Flushing, L. I., was convicted of practicing without a license and fined \$500, in default of the payment of which he is to serve three months in the workhouse. In addition he was sentenced to a year in the penitentiary with the sentence suspended during good behavior.—Aaron Steinberg was convicted May 27 of practicing without a license and sentenced to serve three months in the workhouse, with sentence suspended. Florentine Zosahlo was sentenced to a term in the New York County Penitentiary on the same charge.

NORTH DAKOTA

Special Society Elections.—Dr. Nelson A. M. Youngs, Grand Forks, was elected president of the North Dakota Academy of Ophthalmology and Otolaryngology at the recent annual meeting in conjunction with the state medical association meeting in Bismarck. Drs. Albert E. Spear, Dickinson, and Frederick L. Wicks, Valley City, were named vice president and secretary, respectively.—Dr. Will H. Moore, Valley City, was elected president of the North Dakota Health Officers' Association at the annual meeting in Bismarck in May just before the annual meeting of the North Dakota State Medical Association. Dr. Willard A. Wright, Williston, was elected vice president and Dr. Maysil M. Williams, Bismarck, secretary.

OHIO

Institute on School Health at Ohio State.—Ohio State University, Columbus, conducted a school health institute June 29 to July 2. Invited were school administrators, board members, parents, teachers, physicians, dentists, school nurses, physical educators, psychologists and personnel officers. Subjects discussed included the teacher as a case finder in a school health program, health of school athletes and physical education students, health of girls in physical education, intramural and interscholastic athletics, sex education, mental hygiene, visual problems, orthopedic problems and problems of audition and phonetics. The speakers included Drs. Morris Fishbein, Chicago, Editor of *THE JOURNAL*, on "Medical Nostrums and Quackery"; John H. J. Upham, dean of Ohio State University College of Medicine, "Medicine Views School Health," and Don W. Gudakunst, Lansing, state health commissioner of Michigan, "Newer Trends in School Health Service."

PENNSYLVANIA

District Meetings.—The annual meeting of the Third Councilor District of the Medical Society of the State of Pennsylvania was held in the Pocono Mountains July 12. In addition to reports from councilors, the program included five minute talks by Drs. Frederick J. Bishop, Scranton, president of the state society; David W. Thomas, Lock Haven, president-elect; Frederick M. Jacob, Pittsburgh, chairman of the committee on public relations; Thomas R. Gagon, Pittston, member of the committee on public legislation, and Mrs. Harry M. Kraemer, Scranton, district councilor of the Woman's Auxiliary. Dr. William L. Estes Jr., Bethlehem, was in charge of the scientific program, representing the cancer commission of the state medical society. The Eighth Councilor District of the Medical Society of the State of Pennsylvania held its annual meeting during a day's cruise on Lake Erie June 17, sailing from Erie. Dr. Louis Tuft, Philadelphia, spoke on "Diagnosis and Principles of Treatment of Allergic Diseases" and Drs. William J. Armstrong, Butler, and Channucey L. Palmer, Pittsburgh, discussed the survey of medical service and public health legislation, respectively.

Philadelphia

University Hospital to Be Enlarged.—President Thomas S. Gates of the University of Pennsylvania has announced extensive changes to be made in the University Hospital to provide facilities for development in several fields. Legal procedures incident to the merger of the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases were completed July 1. The orthopedic hospital will continue to be operated in its present plant until the new buildings at the University Hospital have been finished, probably in about two years. Eventually the orthopedic and neurologic work will be carried on in buildings provided by the university. A neurologic institute has been established with Detlev W. Bronk, Ph.D., director of the Eldridge R. Johnson Foundation in Medical Physics, as the director. The new institute will go into operation when the alterations have been made. A new section, to be known as the Crothers Dulles Hospital, will be constructed as a center for obstetrics and gynecology with funds bequeathed by Mrs. Mary B. C. Dulles and her daughter. One floor of this section will be devoted to research, made possible by a grant of \$75,000 from the Commonwealth Fund of New York; another will be the headquarters of the George L. and Emily Harrison Foundation for Surgical Research, for which \$2,000,000 was left to the university several years ago. It will also be the home of part of the new department of radiology to be financed with funds given by Mr. William H. Donner. The Agnew Pavilion, which was damaged by fire in 1937, will be rebuilt and the J. William White Pavilion will be enlarged. The present maternity wing of the Maloney Clinic Building will become the home of the expanded activities in neurology under Dr. Bronk after the Dulles hospital is completed. More than \$1,000,000 will be spent on construction, according to the announcement.

RHODE ISLAND

State Medical Election.—Dr. Edward S. Brackett, Providence, was elected president of the Rhode Island Medical Society at the recent annual meeting and Dr. Charles H. Holt, Pawtucket, first vice president. The next meeting will be in Providence June 7-8, 1939.

Society News.—Dr. Henry N. Pratt, Boston, addressed the Providence Medical Association June 6 on "Seasonal Aspects of Asthma and Hay Fever with Special Reference to a Recent Study of Molds" and Drs. William P. Buffum and Stanley S. Freedman, "Diagnosis and Treatment of Household Dust Sensitivity in Bronchial Asthma of Children."

SOUTH CAROLINA

New Hospital in Columbia.—The Providence Hospital, operated by the Sisters of Charity of St. Augustine, was dedicated June 16 in Columbia. Dr. Walter J. Bristow is chief of staff of the new hospital, which has 120 beds.

Society News.—Dr. William H. Kelley, Charleston, addressed the Spartanburg County Medical Society, Spartanburg, June 27, on sulfanilamide therapy. Dr. Thomas P. Sprunt, Baltimore, addressed the Florence County Medical Association June 15 on research concerning the functions and the pathology of the liver. Dr. Elija M. Hicks, Florence, spoke on "Pituitary and Ovarian Hormones." At a meeting of the Columbia Medical Society July 11 at the South Carolina State Hospital the speakers included Drs. Sol B. McLendon and Glen B. Carrigan on "Treatment of Dementia Praecox" and Rudolph S. Matthews, "Treatment of Pellagra."

TENNESSEE

Health Center Dedicated.—A new building for the Gibson County health unit, built with the aid of the Commonwealth Fund of New York, was recently dedicated at Trenton. Speakers at the ceremony included Barry C. Smith, executive chairman of the Commonwealth Fund, and Dr. Wilson C. Williams, Nashville, state health officer. Gibson County established a health unit in 1922 with aid from the American Red Cross and the state health department. In 1930 the Commonwealth Fund selected it as one of the county units to develop what was considered adequate public health service under the direction of Dr. Frank L. Roberts. Dr. Earl P. Bowerman is at present acting director, succeeding Dr. Roberts, who recently became professor of preventive medicine at the University of Tennessee School of Medicine, Memphis. The new building was erected and equipped at a cost of \$40,000.

TEXAS

North Texas Meeting.—The North Texas Medical Association met in Dallas June 28-29 with the following speakers, among others:

Dr. John E. McDonald, Tulsa, Okla., Fractures of the Femur.
Dr. Dolph L. Curb, Galveston, Chronic Arthritis.
Dr. Walter C. Reddick, Dallas, Pellagra and Its Treatments.
Dr. Herman Klapproth, Sherman, Roentgen Ray Treatment of Infection.
Dr. Olen G. Jones, Cooper, Obstetrics in the Home.

Special Society Elections.—Several societies of specialists held meetings in Galveston during the annual session of the Texas State Medical Association in May. Officers elected by the Texas Neurological Society were Drs. Charles H. Standifer, Austin, president, and Wilmer L. Allison, Fort Worth, secretary, reelected. The Texas Dermatological Society elected Drs. Everett R. Seale, Houston, president, and Duncan O. Poth, San Antonio, secretary. Dr. Joseph B. Foster, Houston, was chosen president of the Texas Orthopedic Society and Dr. Edmund M. Cowart, Houston, secretary. The Texas Pediatric Society elected Drs. Frank O. Calaway, Houston, as president, and Frank H. Lancaster, Houston, secretary (reelected). Dr. George H. Paschal, San Antonio, was elected president of the Texas Association of Medical Anesthetists, and Dr. Robert A. Miller, San Antonio, secretary. Officers elected by the Texas State Heart Association were Drs. David W. Carter Jr., Dallas, president, and Victor E. Schulze, San Angelo, secretary. The Texas Railway Surgeons' Association voted to change its name to the Texas Railway and Traumatic Surgical Association and elected Drs. Alfred L. Ridings, Sherman, president, and Ross B. Trigg, Fort Worth, secretary.

VIRGINIA

Society News.—Dr. John Shelton Horsley, Richmond, addressed the Lynchburg Academy of Medicine, June 6, on "Carcinoma of the Stomach." At a meeting of the Medical Association of the Valley of Virginia in Harrisonburg recently the speakers included Drs. Lewis M. Allen, Winchester, on "The Relation Between Prenatal Care and Obstetric Mortality"; Robert V. Funsten, Charlottesville, "Fractures of the Neck of the Femur," and John M. Emmett, Clifton Forge, "Mesenteric Adenitis." The Southside Virginia Medical Association held its quarterly meeting at Petersburg June 14 with the following speakers, among others: Drs. John Shelton Horsley Jr., Richmond, on "Peritonitis Treated with Sulfanilamide"; James Asa Shield, Richmond, "Insulin Therapy in Mental Diseases," and Meade C. Edmunds, Petersburg, "Ocular Manifestations of Vitamin Deficiency."

WISCONSIN

Fifty Years in Medicine and Music.—Dr. Philip A. Hoffmann was honored recently by citizens of Campbellsport on the fiftieth anniversary of his practice in that town. The Campbellsport band, which Dr. Hoffmann founded in 1889, and the Lions Club sponsored a banquet, at which Dr. Oscar F. Guenther was toastmaster. Dr. Hoffmann, who also celebrated his fiftieth anniversary as organist of St. Matthew's church, graduated in 1887 from the State University of Iowa College of Medicine.

Society News.—The Fond du Lac County Medical Society was addressed recently by Drs. Paul Padgett, Baltimore, on "Modern Care and Treatment of Syphilis" and Benjamin E. Urdan, Milwaukee, "Toxemias of Pregnancy." Dr. William J. Dieckmann, Chicago, discussed "Treatment of Toxemias of Pregnancy" before the Outagamie County Medical Society in Appleton recently. At a meeting of the Rock County Medical Society in Beloit recently Dr. Arthur W. Stillians, Chicago, spoke on "Itching Dermatoses Commonly Encountered in General Practice."

GENERAL

Examination in Orthopedic Surgery.—The next examination of the American Board of Orthopedic Surgery will be held in conjunction with the meeting of the American Academy of Orthopaedic Surgeons at Memphis, Tenn., in January 1939. Applications for this examination must be filed before October 15 with the secretary, Dr. Fremont A. Chandler, 6 North Michigan Avenue, Chicago.

Second Supplement to Pharmacopeia.—The board of trustees of the U. S. Pharmacopeial Convention announces that the second supplement to the eleventh edition of the pharmacopeia is in preparation and will be issued about Jan. 1, 1939. It is believed that the policy of issuing supplements is an improvement over the old plan of decennial revisions, since it makes possible more exacting consideration and extensive review of material.

Results of Special Board Examinations.—Of 112 candidates examined by the American Board of Obstetrics and Gynecology in San Francisco June 13-14, eighty-nine were certified and twenty-three failed. The next written examination for group B candidates will be held in various cities of the United States and Canada November 5. For application blanks and information address the secretary of the board, Dr. Paul Titus, 1015 Highland Building, Pittsburgh (6), Pa.

Society of Traumatic Surgery Organized.—The American Association of Traumatic Surgeons was organized at a meeting in San Francisco June 14 with the following officers: Drs. Kellogg Speed, Chicago, president; Edgar L. Gilcreest, San Francisco, president-elect; Fraser B. Gurd, Montreal, vice president; Ralph G. Carothers, Cincinnati, secretary; Arthur R. Metz, Chicago, and Rettig A. Griswold, Louisville, Ky., recorder. Membership of the new society is limited to 200. It is planned to hold an annual meeting the week prior to the annual session of the American Medical Association. Societies represented in the organization, which aims to develop better and more unified treatment of traumatic surgery, are the American, Western, Southern and Pacific surgical societies.

Special Society Elections.—Dr. Leonard W. Larson, Bismarck, N. D., was chosen president-elect of the American Society of Clinical Pathologists at its annual meeting in San Francisco and Dr. William T. Cummins, San Francisco, vice president. Dr. Thomas B. Magath, Rochester, Minn., is president. Dr. Benjamin T. Terry, Tacoma, Wash., received a gold medal for an exhibit on "Aids in Rapid Diagnosis of Tissues." —Dr. Dudley A. Smith, San Francisco, was elected president of the American Proctologic Society at the recent annual meeting in San Francisco and Dr. Clement L. Martin, Chicago, vice president. Dr. Curtice Rosser, Dallas, Texas, was reelected secretary. Plans were made for a joint meeting in London in June 1939 with the British Subsection on Proctology.

Dr. Seibert Awarded Trudeau Medal.—Florence Barbara Seibert, Ph.D., assistant professor of biochemistry, Henry Phipps Institute of the University of Pennsylvania, Philadelphia, received the Trudeau Medal at the annual meeting of the National Tuberculosis Association in Los Angeles June 20-24. The award was made in recognition of research on the chemistry of protein molecules derived from the tubercle bacillus. Dr. Seibert, the first woman to receive the Trudeau Medal, is a native of Pennsylvania and a graduate of Goucher College, Baltimore, and Yale University, New Haven, Conn. Before joining the Phipps Institute in 1932 she was for several years instructor in pathology at the Otho S. A. Sprague Memorial Institute at the University of Chicago. During the past year Dr. Seibert has been at the University of Upsala, Sweden, on a Guggenheim fellowship.

Can You Identify This Amnesia Victim?—The Missing Persons Bureau of the Salvation Army, New York City, reports that a well dressed, educated man, came to their office June 22 relating a strange story of having lost his memory ten years ago and of having been unable to identify himself ever since. He only remembers that he had a ring on his finger and marks on his clothes which showed his initials to be H. T. He has therefore assumed the name of Hamilton Thorne. He is an American, 50 years of age, 5 feet 5 inches tall, with dark hair, blue gray eyes and florid complexion. His conversation shows that he has a great deal of medical knowledge. He says that in 1928 he found himself in a hospital in Boise City, Idaho, with a broken jaw and lacerations of the face. He had a bag of surgical instruments near him when found and he believes he was a surgeon and that he was kidnapped and robbed. He claims to have done everything possible through advertisements and inquiries at hospitals in the United States and Canada to make some connection but has not been able to get any clue whatever to his identity.

Society News.—The national convention of the Polish Medical and Dental Association will be held in conjunction with the Polish American National Bar Association in Pittsburgh August 25-27.—The National Association of Coroners will hold its annual convention in St. Louis at the Statler Hotel August 29-31. Dr. Samuel R. Gerber, Cleveland, is president and Mr. Peter Zisch, Milwaukee, secretary. All coroners and medical examiners are invited to attend.—The Central Association of Obstetricians and Gynecologists will hold its tenth annual meeting at the Hotel Radisson, Minneapolis, October 6-8, in connection with the Minnesota Society of Obstetrics and Gynecology. Dr. Jennings C. Litzenberg, Minneapolis, will be the guest speaker.—Dr. Nelle S. Noble, Des Moines, Iowa, was chosen president-elect of the American Medical Women's Association at the annual meeting in San Francisco in June. Vice presidents elected are Drs. Mary E. Mathes, San Francisco; Mary M. Frazer, Detroit, and Eva Dodge, Montgomery, Ala. Dr. Katherine Elizabeth Parker, Washington, D. C., was elected secretary and Dr. Elizabeth A. Kittredge, Washington, D. C., was appointed editor of *Women in Medicine* to succeed Dr. Mary McKibbin Harper, Oak Park, Ill., after twelve years' service.

CANADA

Ontario Adopts Compulsory Pasteurization.—Beginning October 1 the milk supply of all Ontario cities, towns and adjoining suburban areas will be pasteurized and by December 31 the order will apply to the whole province. Ontario is the first Canadian province to have a compulsory pasteurization law. The October 1 order affects twenty-seven cities, 144 towns, seventeen villages and fifty-five townships; but only twenty-seven towns and ten villages of more than 1,000 population do not already have local compulsory pasteurization ordinances.

FOREIGN

Society News.—Drs. George W. Swift, Seattle, and Howard L. Updegraff, Hollywood, Calif., were guest speakers at the eleventh annual meeting of the Royal Australasian College of Surgeons in Sydney, Australia, recently. Dr. Swift spoke on "Craniocerebral Traumatism" and Dr. Updegraff on "Plastic Tissue Grafting" with a motion picture in color.

New International Journals.—Three new journals, two of them primarily designed to be international in nature, are published by Verlag von S. Karger of Leipzig and Basel: *Cardiologia*, devoted to heart disease, is in its second year; *Bio-Morphosis* is to be concerned with research in biologic morphology, and the *Schweizerische Zeitschrift für allgemeine Pathologie und Bakteriologie* is a Swiss review of general pathology and bacteriology. Only one issue of each of the last two has appeared.

French Institute on Occupational Diseases.—The minister of labor of France recently established an Institute for the Study and Prevention of Occupational Diseases in Paris. It includes an examination room, a laboratory for chemical and toxicologic research and a special photographic laboratory. It also has a library that offers all the specialized publications in several languages, bibliographies and a complete catalogue of published articles on the subject of occupational pathology and hygiene. The institute will publish every two months the *Archives des maladies professionnelles d'hygiène et de toxicologie industrielles*. The director is Dr. Guy Hauser.

International Congress on Industrial Medicine.—The eighth International Congress of Industrial Accidents and Occupational Diseases is to be held at Frankfurt on the Main, September 26-30, under the presidency of Professor Martinek of the Prussian ministry of labor. The secretary-general is M. Bauer, adviser of the same ministry. There will be three sections of the congress: industrial accidents, occupational diseases and combined sections. In the first the principal subjects will be injuries to the peripheral nerves with the exception of the sympathetic system and injuries to the foot. In the second the discussions will be on occupational diseases other than silicosis and asbestosis and injuries due to solvents. In the combined meeting the subject will be importance of predisposition and wear and tear in relation to occupational accidents and diseases. Dr. Royd R. Sayers of the U. S. Public Health Service, Washington, D. C., is president of the permanent committee of the United States.

CORRECTION

Eutonon.—In the last paragraph of a Query and Minor Note entitled "Spasmosedine, Cortide and Eutonon" in THE JOURNAL, May 14, is a statement that "Eutonon" is a liver extract. Dr. George Zuelzer of New York writes that the product Eutonon is a heart hormone and not a liver extract.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 25, 1938.

Placental Infection in Malaria

At the Royal Society of Tropical Medicine and Hygiene, Dr. P. C. C. Garnham discussed the determination of the process by which the natives of a malarial country overcome their infection. The reticulo-endothelium was the chief weapon of defense and previously had been studied mainly in fatal cases. The placenta offered much greater facilities for detailed observation. It was unique in that in its intervillous spaces parasites and reticulo-endothelial cells alone were present and their interaction could be easily observed.

The well known picture of schizonts, phagocytes and so on was found to be absent in the youngest placentas and to occur only after the fourth month of pregnancy; it was present only with subtertian infections and was absent with quartan infections. Examination of placentas in different stages of the disease showed that at the beginning of a new infection no reticulo-endothelial cells were present, though schizonts were numerous. But the placenta of a patient who had malaria for a week showed a marked reticulo-endothelial response. On the other hand, in relapses many reticulo-endothelial cells were found practically from the start, presumably because of sensitization from the original attack. In chronic malaria the intervillous spaces were occupied almost entirely by myriads of reticulo-endothelial cells and lymphocytes. All stages in the transformation of the latter into the former by way of the polyblasts of Maximow were seen.

To ascertain whether congenital malaria occurred, 404 patients were examined. Of these a fourth showed positive placental films, but the blood of the infants at birth and after seven days was examined with negative results. It had to be remembered that these cases came from areas where malaria was hyper-endemic, immunity was high and acute malignant infections were rare. The expulsion of the placenta removed an appreciable portion of the cellular defense of the body and might be responsible for the parasitemia and fever so common after childbirth.

In the discussion Mr. Green-Armytage, formerly professor of obstetrics and gynecology at Calcutta, stated that he had seen congenital malaria only once, in a European baby at Calcutta. He agreed that the loss of the placenta, with its content of macrophages, was responsible for malarial relapses following delivery, and not the effects of fatigue and hemorrhage, as had been suggested.

An Emergency Hospital Bed Service

An important advance in hospital administration has been made in the London area by the opening of "the emergency hospital bed service." Heretofore the 8,000 physicians practicing in London have lost much time in telephoning from hospital to hospital in search of a bed for an emergency case. The new service is a central clearing house for all the voluntary hospitals, at which information can at once be obtained. When a physician has an emergency or acute case which he wants to be admitted he rings up this service and is asked his name and telephone number, the patient's name, age and sex, and the diagnosis. If he states the hospital to which he wishes the patient to be admitted, the service will tell him whether a bed is vacant and if it is will book it for him. If there is no vacancy he will be asked to state his next preference, and so on until his requirement is met. In the case of certain hospitals which have undertaken to bear the cost of an ambulance, the service will also book this. The service will be open every day from 8 a. m. to 10 p. m., and it is intended to extend it in due course to the twenty-four hours. By a system of colored disks on an

tell at a glance whether a bed is free at a particular hospital for a man, woman or child or for what particular type of treatment it is available. A preliminary working test showed that there are likely to be sufficient beds available to meet the requirements of physicians, and in most cases admission was obtained for the patient within fifteen minutes. No charge is made for the service, since the cost is met by King Edward's Hospital Fund for London. It should be noted that the service is for the London voluntary hospitals, which all work as independent units. It is not required for the 36,000 beds of the London municipal hospitals, which are under the single control of the county council and therefore already have a coordinated system.

The Prevention of Industrial Eye Injuries

At the Royal Eye Hospital an exhibition has been opened which marks the beginning of a campaign to encourage the wider use of goggles, veils, guards for grinding machines and other safeguards in occupations involving risk to the eyes. The hospital has formed an industrial eye committee to further this object by making employers conscious of the necessity for safety measures and combating prejudice or negligence among the workmen whom the appliances are intended to protect. Part of the exhibition is to remain in the casualty department of the hospital as a permanent museum for the instruction of the 7,000 workmen whom the hospital treats annually for eye injuries. Mr. Joseph Minton, surgeon to the hospital, estimates that throughout Great Britain 250,000 eyes are injured every year through industrial causes, with resulting blindness or serious damage to sight in numerous cases. It is claimed that 85 per cent of these accidents are preventable. In the exhibition are shown different types of goggles for such occupations as grinding, welding and riveting, and metal sputtered goggles, glare and dust proof, which are used by air pilots. These sputtered glasses are partly mirrors, partly transparent, so that harmful rays are reflected without cutting off the wearer's view. A grim exhibit is eyes removed with splinters still in them, of which fifty are removed annually at the hospital. This exhibition is a new departure in prevention, and the hope was expressed at the opening that it would be an example to be followed by hospitals in industrial areas.

Special Committee on Mental Health

A special committee has been appointed by the British Medical Association to inquire into and report on the present medical equipment and provision for dealing with mental health in this country, with particular reference to the problems of treatment and prophylaxis of the psychoneurotic and allied disorders. The committee will be asked to consider the position of psychology and psychologic medicine in the medical curriculum and the graduate facilities in this subject, the extent of the prevalence of the various forms of mental ill health and its importance in relation to national fitness, the results of treatment and the need for extension and improvement of institutional provision. In the discussion Sir Henry Brackenbury said that there was a growing feeling that there was an immense amount of mental disorder and disability in the country. If it could be brought home to the public that treatment was as successful as on the physical side, a much greater amount of public support would be attracted to the medical agencies engaged in the work.

Blood Test Decides Paternity Case

The first case in which a blood test has decided a paternity case in England has occurred. The woman concerned gave evidence to the effect that the man was the father of her child. He denied this and his lawyer intimated that if the magistrates were not satisfied that he was not the father he would like a blood test to be made. This was done by Dr. Roche Lynch, senior official analyst to the government. He found that the woman's blood belonged to group AMN, the baby's to group AN and the man's to group OM. The children of parents whose

groups were MN and M could have only M or MN and could not have N, which the child's blood was in this case. Therefore, with MN for the mother the father must have MN or N, which the man did not. It was established that he could not be the father of the child. The factors A and O had no significance in this case. The woman's lawyer said that he was prepared to accept the doctor's statement, and the claim was dismissed.

Invading China with Drugs

A strong indictment of the Japanese methods in occupying China was made by Mr. George Buller of the United States at a meeting of the Advisory Committee on Traffic in Opium of the League of Nations, held at Geneva. He said that Japan was deliberately flooding China with opium and heroin as part of the methods of overcoming Chinese resistance and that the traffic, in which there had been a vast increase, was in the control of the Japanese army, with disastrous results to the Chinese population and with repercussions on the illicit international traffic that were likely to be a great danger to the rest of the world. Mr. Butler's denunciation was supported by the representatives of Egypt, Canada, India and Great Britain. Dr. Hoo Chi-tsai, the Chinese representative, said that Japan was invading China with drugs as well as with soldiers. Consumption of opium was encouraged by the Japanese military authorities, and the menace was increased by clandestine manufacture.

PARIS

(From Our Regular Correspondent)

June 25, 1938.

The Intensive Treatment of Syphilis

The administration of large doses of neoarsphenamine over a three day period has advantages over the classic method of giving smaller doses for a longer period according to some syphilologists here. In the March 12 letter (*THE JOURNAL*, April 9) reference was made to a paper read by Dr. Arnault Tzanck. Up to that time no deaths had been reported, but a case has since been observed by Professor Loeper and Dr. Tzanck in which death followed administration of the massive doses of neoarsphenamine recommended by Dr. Tzanck. The necropsy revealed a hemorrhagic condition of the left adrenal. Discussion of this question was resumed at the May 13 meeting of the Société médicale des hôpitaux of Paris after the reading of a paper by Dr. Paul Chevallier. The intensive treatment of syphilis was first advocated by Pollitzer of New York in 1920 in the form of a large dose of arsphenamine given daily for three successive days and followed by a series of injections of a mercurial preparation for from four to six weeks. Pollitzer recommended four series of such treatments during the first year, with intervals between them of six weeks, and advised that injections of arsenical compounds be given slowly over a period of twenty minutes. Dr. Chevallier adopted a daily dose during the three days of 0.9 Gm. of neoarsphenamine and used as a follow-up treatment twelve injections of some bismuth preparation given in a month. Only two series have been necessary as a rule, with an interval of a month between them. Dr. Tzanck had reported that he preferred to employ a larger dose, 1.5 Gm., of neoarsphenamine each day for three days and the intravenous drop method instead of intravenous injection.

Between 1932 and February 1938 Dr. Chevallier had given 1,676 injections to 771 patients and claimed remarkable results with active recent syphilis. He had never observed serious complications. He emphasized the necessity of hospitalizing for a minimum of three days the patient to whom the large doses are given. The intensive treatment is especially indicated for young adults, although patients up to the age of 50 had not shown any ill effects. The three day treatment can be given even during pregnancy. The dose should be decreased to 0.75 Gm. for poorly nourished as well as for very obese patients.

The intensive treatment is contraindicated if there are evidences of cardiovascular or renal disease. After the slow injection (during twenty minutes) of 0.9 Gm. each day for a total of three days, an interval of two days is allowed to elapse before a series of injections of either a bismuth or a mercury preparation, preferably the former, is given for from four to five weeks. In many cases the Wassermann reaction becomes negative after the first series. The chief advantage of the intensive method is that one never encounters the toxic symptoms which are so often observed when arsenical preparations are given over a protracted period. Icterus is rarely seen, having been observed in only three cases, and is of a mild type. In some patients a sharp rise of temperature and an exacerbation of the roseola, mucous patches or chancre occur, but only when the syphilis is active. Such a reaction is of no significance after the first injection and will appear only in mild form after the second one. Postarsphenamine erythemas are infrequent, but nitritoid crises, so termed because the symptoms resemble those following inhalation of amyl nitrite, were noted in three cases and, although mild, led Dr. Chevallier to advise against the continued use of neoarsphenamine.

In the discussion following Dr. Chevallier's paper, Dr. Tzanck said that he preferred the slower drop method at the rate of 0.01 Gm. per minute of neoarsphenamine to that of Dr. Chevallier, who considers a twenty minute period adequate. Dr. Tzanck maintained that a distinction should be made between symptoms of intoxication and those of intolerance. The toxic complications are far from being the more serious of the two and aid in determining the dose to be given. These toxic signs are slight paresthesia and temporary abolition of a reflex. The daily dose should not be increased when they appear. The symptoms of intolerance have been given in reports of Tzanck's previous papers. He employs a dose larger than Dr. Chevallier's, giving 1.5 Gm. each day for three days. Dr. Pinard said that he was not convinced of the efficacy of the Pollitzer method, because changes in the Wassermann and similar reactions occur more slowly than when the classic methods are employed. Large doses of neoarsphenamine must be given, but they should not be discontinued until one is sure that the patient is cured. Dr. Jausion said that large doses, at least experimentally, do more harm than smaller ones. Large doses may give rise to extensive cellular necrosis which the organism cannot take care of. The arsenical preparations can thus cause exacerbation of latent hemopathies and infections due to virulent bacteria.

SUDDEN DEATH FOLLOWING INTENSIVE TREATMENT

The case previously mentioned, in which death occurred after intensive treatment, was reported by Dr. Tzanck in collaboration with Professor Loeper and Dr. Brouet-Sainton at the May 6 meeting of the Société médicale des hôpitaux. Death was caused by adrenal hemorrhage following the treatment. The patient was a man aged 42 who had been under treatment for two years but whose serologic reactions had remained positive. He was given a massive total dose of 4.5 Gm. of neoarsphenamine in three days, after which the Wassermann reaction became negative. Ten days after the first injection the patient had hemoptysis, and three days later he complained of severe pain in the left upper abdominal quadrant. Roentgenograms of the chest and examination of the sputum failed to reveal any evidence of tuberculosis. After the sudden appearance of a collapse syndrome the patient died. At necropsy the heart and lungs were normal. The liver and kidneys were markedly hyperemic. The left adrenal was very large and the capsule ruptured in places, with many blood clots on the surface of the gland. Microscopic study confirmed the macroscopic diagnosis of hemorrhagic adrenalitis. The object of the authors in reporting the case was to call attention to the risks incident to the administration of arsenical preparations especially in the massive doses suggested by Tzanck. Although successful in a comparatively large number of cases, this method is not free from serious complications.

Poisoning by Mushrooms

At the May 31 meeting of the Académie de médecine, Drs. Guetrot and Meitès reported experimental observations on the use of a 10 per cent saline solution in the treatment of mushroom poisoning as proposed by Dr. Le Calvé in an article published in the *Presse médicale* of Nov. 4, 1936. The method consists in having the patient drink very slowly, at first every half hour and then every hour, a glass of cold water to which a teaspoonful of ordinary table salt has been added. If the patient vomits, the dose should be repeated. The drinking of four or five glasses, corresponding to 40 Gm. of sodium chloride, suffices. This solution contains approximately ten times the total quantity of chlorides in a liter of blood. The clinical results reported by Dr. Le Calvé have been excellent, and the method has been termed the "decachloride (10 per cent) salt solution" treatment. Drs. Guetrot and Meitès, as the result of their observations on rabbits, found that the use of 10 per cent sodium chloride solution is the most efficacious treatment of this form of poisoning. A hypertonic dextrose solution was suggested by Professor Binet and Dr. Marek but so far has not been employed clinically. The "decachloride solution" produces a temporary (from 15 to 20 per cent) hyperchloridation of the plasma and raises the blood sugar to a normal level. The toxic substance contained in certain varieties of mushrooms is not a true poison but appears to be a polypeptide closely resembling insulin in chemical composition and belonging to a group of compounds termed insulinoïd. Both insulin and phalloidine (the toxic substance in poisonous mushrooms) produce hypoglycemia and convulsions. Mushroom poisoning is essentially the result of a disturbance of the equilibrium of the plasma.

French Electroradiologic Congress

The fourth annual congress of the French electroradiologic society will be held October 5-8 at the Paris Medical School. A paper on the biologic applications and therapeutic hypotheses of neutrons and artificial radioelements will be read by Professor Joliot-Curie. The program includes the following subjects in the form of collective reviews and discussion: the value of tomography, i. e., radiography in sections; the bioelectrical phenomena of the nervous system; anti-inflammatory radiotherapy; biologic action on the secretions and excretions of radiation and currents of low and high frequency; progress in historadiography; the interpretation of electrotonic reactions, and recent progress in neuromuscular stimulation. Persons wishing to attend the congress should write to Dr. Delhern, 1 rue Les Cases, Paris 7.

BERLIN

(From Our Regular Correspondent)

May 30, 1938.

Congress on Internal Medicine

The Congress of the German Internal Medicine Society met in March in Wiesbaden with Professor Assmann of Koenigsberg in the chair. The first day was given over to a joint session with the German Society of Pediatricians. For the session with the German Society of Pediatricians. For the internists, about 2,000 of whom were present, this year's meeting represented the fiftieth anniversary jubilee. Dr. Blome of Berlin, as spokesman of the national fuhrer of physicians, delivered the inaugural address. He mentioned the great concern of the medicopolitical authorities for the maintenance of an adequate younger generation in medicine and other scientific professions. He emphasized the need for greater permeation of the universities by the Nazi philosophy. The type of learning formerly imparted by the universities bore almost exclusively the imprint of a liberalist weltanschauung; this ideology, although politically defunct and deprived of any influence, still rears its mischievous head occasionally in cultural and intellectual circles. Each branch of learning must cultivate racial and national consciousness not only as vital to its existence but as a normal approach to all problems and a basic incentive behind all efforts. Genuine

superior intelligence is a vital necessity and to be encouraged at all times but it has nothing to do with the pernicious and unproductive intellectualism of the past. It is not always easy for youth to relate the isolated problem under investigation to the greater struggle, "to attain the synthesis of the marching boot and the book."

The first report concerned "Tests of Cardiac Function" by H. Straub of Göttingen. Decisive for adequate circulation are the demands of the internal respiration; volumes of from 3 to 30 liters per minute are required according to the effort involved. In this connection it is erroneous to be concerned only with the heart since, despite its special function as a motor, this organ is but one of a group of integrated organs which participate in the general economy of circulation and respiration. The general vascular system too, and last but not least the finely balanced nervous and hormone regulation, may be sources of circulatory failure. The concept of insufficiency can be defined hemodynamically as venous congestion with dilatation of the heart and chemically in terms of anoxemia and cyanosis. During rest the circulation possesses reserve energies which can always be drawn on to meet additional demands. The latter occasionally originate in the circulatory system itself, in hypertonia for example. A series of tests are available for evaluation of the circulation; among the easiest to administer is the determination of the longest possible respiratory pause, the test injection of strophanthin, evacuation of the veins of the hands by raising the arm, and the establishment of changes in the vital capacity. A history of discomfort in climbing stairs and nycturia furnishes valuable indications. The test of blood pressure and heart beat at rest and after exercise, and studies of the electrocardiogram during rest and exercise are mandatory procedures in most cases. More intricate tests such as determination of volume per minute and basal metabolism are the work of the clinic. The chief difference between collapse and decompensation consists in the diminution of the amount of blood in circulation during collapse and the increase in volume during decompensation. The evaluation of athletic hearts offers special difficulties. Extremely elaborate examination procedures are indicated, as the patients are in most instances physically trained and present no signs whatever of insufficiency while at rest. The testing of an athletic heart ought to be based on the maximal effort entailed by participation in the sport in question.

Stolte, Breslau pediatrician, stated that particular caution was required in the performance of functional tests of children if irreparable damage is to be avoided. Heart murmurs which are really only accidental disappear sooner under a regimen of exercise therapy. High grade malnutrition, such as was common during the World War, for example, may lead to myocardial weakness in children, which is often first evidenced by nycturia. During puberty, deviations from the norm with respect to the blood pressure and the size of the heart are to be evaluated with the utmost reservation, as in most instances spontaneous return to normal takes place post partum. There is no proof that the size and shape of the heart correspond specifically to any of the various constitutional types. In childhood in particular the circulatory apparatus exhibits amazing adaptability to increased demands.

Various speakers discussed the testing of cardiac function. Among others, Frey of Berne spoke on the important influence of athletic training on the performance of the heart and demonstrated that the untrained musculature requires more blood during effort than the trained musculature; accordingly in the untrained a more uneconomical burden is placed on the circulation. Dilatation and hypertonia often exert unfavorable influence on the intramural cardiac blood perfusion.

At the second day's session the first speaker was von Bergmann of Berlin, who provided a review discussion of the function and disorders of the adrenal glands. He pointed out,

among other things, that the effects of adrenal cortex extract, which now (since its synthetic preparation by Reichstein) can be better studied, are closely linked with carbohydrate and fat metabolism. Apparently its effective mechanism depends on the formation of intermediary products of phosphoric acid metabolism. Administration of this extract is a clinical indication in most disorders of the adrenals; one should remember too that, in general infections of all kinds, serious disturbances of these organs are as a rule demonstrable. Von Bergmann referred to studies made at his clinic, which serve to establish the favorable influence of treatment with adrenal cortex extract as a nonspecific therapy of infections and of diphtheria in particular. The determination of extremely high vitamin C values in the adrenal cortex of healthy subjects and the decline of these values in the presence of infection led the author to attempt combined adrenal cortex extract and vitamin C therapies. Both subjectively and objectively favorable results were obtained.

The second report on the same main theme was submitted by Baumann, Basel pediatrician. He discussed in particular the importance of the adrenals in infectious diseases of childhood. According to numerous observations of recent years, no certain decision is possible at this time with respect to the administration of adrenal cortex extract, especially in diphtheria, although this procedure has become increasingly common. Despite the fact that the patient appears subjectively benefited by the medication, objective signs of improvement are demonstrable in only a few cases. The addition of vitamin C increases the favorable effect, perhaps by inhibition of the too rapid oxidation of the adrenal substances. Some interesting theories have been advanced with regard to acquired and congenital resistance against infectious diseases, which is more closely related to the function of the adrenal cortex. Baumann described the clinical picture of acute adrenal apoplexy, in which, usually on the basis of a general infection, massive hemorrhages occur in these glands. Children are chiefly affected by this disorder; most cases run a speedy course that ends fatally and no therapeutic measure is of any avail.

A protracted discussion of the clinical and experimental aspects of the foregoing problem then took place. It was stated that, according to the studies made by Nitschke and Krätschell, both of Berlin, the hormone of the adrenal cortex may be regarded as a mixed substance; they were able to isolate from it a potassium-lowering principle which in its solubility differs fundamentally from corticosteron. The normal potassium content in the blood, usually around 30 mg. per hundred cubic centimeters, declined to 16 mg. under the influence of this powerful substance. As the potassium value reaches its low, the blood manifests an incapability of coagulation the exact cause of which is not yet known.

According to Claussen and Steiner, both of Frankfurt on the Main, the question of the existence of a hereditary predisposition for articular rheumatism is to be answered in the affirmative, thanks to research on twins.

The chief topic at the third day's session was vitamin B. Physiologist Abderhalden of Halle on the Saale submitted a report on vitamin B₁. He called attention to the notable part played by B₁ in the sugar and protein metabolism; the vitamin makes possible the formation of intermediary products of metabolism and this is necessary to life. There exists a substantial quantitative relationship between carbohydrate metabolism and B₁ content of the organism, which from time to time involves a correspondingly great need of B₁. The required amount fluctuates from 600 to 3,000 micrograms for healthy and sick subjects. The necessary supply of B₁ is not assured by the type of dietary most common at present. Especially rich sources of B₁ are liver, kidney, pork, potatoes and whole grained bread. In roasting food, more than half of the B₁ is lost, whereas in baking only a small portion is destroyed. An adequate supply of B₁ substantially increases the capability of resistance against

infection. In conclusion, Schroeder of Munich discussed the clinical significance of B₁. Excessive ingestion of white bread and sugar may on occasion induce a certain B₁ deficiency which can quickly give rise to neuritic disturbances. The sensitivity of the nervous system to B₁ deficiency also explains why administration of the substance may be clinically indicated. Disturbances of the sensory nerves are therapeutically more easily influenced than disturbances of the motor nerves. Polyneuritis of alcoholic, diabetic or postinfectious origin usually responds favorably to the administration of B₁ (during the course of an infectious disease the B₁ requirement is greatly increased). Too small individual doses ought not to be prescribed. Then too in acute manifestations of funicular myelosis complicating pernicious anemia the utilization of B₁ may be tried, although a definite evaluation of its influence in such cases is not yet possible. Vitamin B₁ therapy may also be indicated in gout. Favorable influence of B₁ on the metabolism of diabetic patients has not yet been determined.

Schaltenbrand, Würzburg neurologist, supplemented the foregoing reports by an interesting talk on nervous disorders. He emphasized in particular that in considering vitamin B₁ deficiency as a basis of neuritis one should not overlook other possible etiologic factors, the influence of cold weather for example, which made itself felt most obnoxiously during the winter of 1928-1929. In sciatica, for example, only about 50 per cent of all cases react favorably to administration of from 30 to 50 mg. of B₁ daily. No evidence of an avitaminotic etiology of multiple sclerosis has been adduced, yet frequently good remissions are obtained by combined treatment with vitamin B₁, coarse diet and cod liver oil. Cisternal and lumbar administration of B₁ sometimes produce symptoms of meningeal irritation, which disappear within about twenty-four hours and are never of a dangerous character.

Kuhn of Heidelberg discussed vitamin B₂ from the chemical point of view. He pointed out in particular that in the study of this vitamin complex one evidently has to do not with one single product but with a combination of various effective substances, which permit themselves to be partially isolated by suitable technics of extraction; hence the enumeration from B₂ to B₆.

Concluding this discussion, the chairman emphasized the importance of vitamins of the B group and said that there is no absolute guaranty of an adequate supply of these vitamins in the German national food supply. The convention accordingly addressed a memorial to the national government in which was stressed the importance to the national dietary of such foods as whole grain bread, fruits and fresh vegetables.

Marriages

ROBERT FIGUERS MOSELEY JR., Kingston, N. Y., to Miss Florence G. Sessions of Palmyra, May 14.

MILLARN BAINBRIDGE BETHEL to Miss Elizabeth Newell Roach, both of Statesville, N. C., May 10.

HOMER EARLE FERGUSON, Richmond, Va., to Miss Audrey Bryan Tulloh of Mineral, N. C., June 3.

STEWART HART AUERBACH, Montgomery, Ala., to Miss Jane Sykes Dustin of Tampa, Fla., June 14.

CHARLES W. ATKINSON to Mrs. Bertha Harkrider McCormick, both of Boswell, Ind., June 28.

CHARLES HAROLD AVENT to Miss Emily Schoolfield Wallace, both of Memphis, Tenn., in June.

JULIUS B. STOKES, Pontiac, Ill., to Mrs. Georgiana Nance Donar of Kankakee, May 16.

LEONARD B. AINSWORTH, Lawrence, Mass., to Miss Mary E. Farnham of Medford recently.

MATTHEW ARNOW to Miss Daisy Belle Oxley, both of Jacksonville, Fla., June 30.

Deaths

William Stewart Fulton * Wheeling, W. Va.; Ohio Medical University, Columbus, 1898; past president of the West Virginia State Medical Association; formerly member of the state board of health; member of the advisory board of the state public assistance council; served during the World War; fellow and member of the board of governors of the American College of Surgeons; on the staffs of the Reynolds Memorial Hospital, Glendale, and of the Ohio Valley General and Wheeling hospitals; aged 65; died, May 30, of coronary thrombosis.

John Charles Sullivan, Du Bois, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1890; member of the Medical Society of the State of Pennsylvania; fellow of the American College of Surgeons; on the staff of the Du Bois Hospital; aged 71; died, April 7, of hemolytic jaundice.

George Caplice Miller * Seattle; St. Louis University School of Medicine, 1909; served during the World War; fellow of the American College of Physicians; aged 51; on the staffs of the King County Hospital and the Providence Hospital, where he died, April 1, of acute lymphatic leukemia.

Albert Globus, San Bernardino, Calif.; Columbia University College of Physicians and Surgeons, New York, 1923; at one time on the staffs of Veteran Administration facilities in Northport, N. Y., and Waco, Texas; aged 37; died, April 26, of pulmonary tuberculosis.

John Rauschkolb * Columbus, Ohio; Starling Medical College, Columbus, 1898; at one time lecturer on pharmacy at his alma mater; past president of the Columbus Academy of Medicine; aged 78; died, April 20, in the Grant Hospital, of a cerebral hemorrhage.

Noah Allen Overmiller * East Prospect, Pa.; Baltimore Medical College, 1895; bank president, member of the borough school board and registrar of vital statistics for East Prospect and Yorkana and Lower Windsor township; aged 71; died, April 19, of pneumonia.

James M. Craighill, Baltimore; University of Maryland School of Medicine, Baltimore, 1882; member of the Medical and Chirurgical Faculty of Maryland; at one time clinical professor of medicine at his alma mater; aged 81; died, May 19, of myocarditis.

John Crawford * New Rockford, N. D.; University of Toronto Faculty of Medicine, Toronto, Ont.; Canada, 1894; past president of the North Dakota State Medical Association and of the Tri-County Medical Society; aged 66; died, May 23, of heart disease.

George Atwood Pettigrew, Sioux Falls, S. D.; Dartmouth Medical School, Hanover, N. H., 1883; for many years president of the board of education; formerly bank president; aged 80; died, April 13, in the Sioux Valley Hospital, of coronary thrombosis.

John W. Bowman, Tompkinsville, Ky.; University of Tennessee Medical Department, Nashville, 1900; Kentucky University Medical Department, Louisville, 1901; member of the county board of health; aged 72; died, May 3, of carcinoma of the rectum.

George Washington Anderson, Littleton, W. Va.; Louisville (Ky.) and Hospital Medical College, 1908; for many years health officer; aged 65; died, May 20, in the Ohio Valley General Hospital, Wheeling, of carcinoma of the stomach.

William Edward Sampliner, Cleveland; Western Reserve University Medical Department, Cleveland, 1903; aged 56; died, April 7, in the Lutheran Hospital, of coronary thrombosis and essential hypertension.

George Frederick Ashley, Montpelier, Idaho; Barnes Medical College, St. Louis, 1907; member of the Idaho State Medical Association; aged 60; died, May 14, of arteriosclerosis and cerebral hemorrhage.

Alonzo Howe Woodford, Belington, W. Va.; University of Maryland School of Medicine, Baltimore, 1892; member of the West Virginia State Medical Association; aged 78; died, April 16, of uremia.

Walter L. Snair, San Diego, Calif.; Colorado School of Medicine, Boulder, 1901; member of the Colorado State Medical Society; aged 65; died, April 24, of coronary occlusion and arteriosclerosis.

Francis O. Gross, Philadelphia; Hahnemann Medical College of Philadelphia, 1880; on the staff of the Women's Homoeopathic Hospital; aged 80; died, April 24, of coronary thrombosis.

Amos A. Flaten, Edinburg, N. D.; Minneapolis College of Physicians and Surgeons, 1890; at one time secretary of the state board of health; aged 73; died, April 22, of arteriosclerosis.

Robert Burlingham * New York; Columbia University College of Physicians and Surgeons, New York, 1914; aged 50; was killed, May 28, when he jumped from a fourteen story window.

George J. Hartman, Pasadena, Calif.; Baltimore Medical College, 1902; formerly on the staff of the Hackley Hospital, Muskegon, Mich.; aged 62; died, April 21, of cerebral hemorrhage.

Marcus Bryed Wilson * Chicago; University of Illinois College of Medicine, Chicago, 1916; on the staff of St. Luke's Hospital; aged 53; died, May 16, of coronary thrombosis.

John Frederick Beerman, Tucson, Ariz.; Starling Medical College, Columbus, 1907; served during the World War; aged 58; died, May 1, in Phoenix of pulmonary tuberculosis.

Emmogene Powell Sherman, Chehalis, Wash.; Hahnemann Medical College and Hospital, Chicago, 1895; aged 80; died, April 9, of bronchopneumonia and arteriosclerosis.

Elzcar Montpetit, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1893; died, April 19.

George Washington Geyer, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1902; aged 57; died, April 6, of cerebral hemorrhage.

Harry Walton Kirby, Georgetown, Colo.; University of Pennsylvania Department of Medicine, Philadelphia, 1896; aged 68; died, April 18, in Denver of pneumonia.

Katherine Louise Storm, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1893; aged 81; was killed, April 25, in an automobile accident.

Willis Alonzo Dewey, San Francisco; New York Homoeopathic Medical College, 1880; aged 79; died, April 1, of acute nephritis, aortitis and pulmonary edema.

Arthur Dean Smith, Gilmanton, Wis.; Rush Medical College, Chicago, 1900; served during the World War; aged 64; died, April 19, of coronary thrombosis.

Perry Rufus Brubaker, Bucyrus, Ohio; Ohio Medical University, Columbus, 1899; aged 70; was found dead in bed, May 8, in North Baltimore of heart disease.

Herbert William Dasse, Los Angeles; Rush Medical College, Chicago, 1929; formerly police surgeon; aged 34; was found dead, April 13, of heart disease.

Gideon Wanzer Durga, Rochester, N. Y.; Long Island College Hospital, Brooklyn, 1878; aged 85; died, April 15, of myocarditis and arteriosclerosis.

John Henry Shultz, Lexington, Ky.; American Eclectic Medical College, Cincinnati, 1893; aged 74; died, April 13, of cholecystitis and arteriosclerosis.

Charles Allen Buell, Keego Harbor, Mich.; Homoeopathic Hospital College, Cleveland, 1890; aged 73; died, May 21, of myocarditis and arteriosclerosis.

Benjamin Albert Sawtelle, Wales, Mass.; Boston University School of Medicine, 1875; aged 84; died, May 9, of strangulated inguinal hernia.

G. Edward Rochrig, Los Angeles; Michigan College of Medicine and Surgery, Detroit, 1890; aged 73; died, April 17, of carcinoma of the lung.

Lawrence G. Wilbertson, Winona, Minn.; Hahnemann Medical College of Philadelphia, 1880; aged 85; died, May 29, of chronic myocarditis.

F. Horace S. Ritter, Pittsburgh; Jefferson Medical College of Philadelphia, 1888; aged 73; died in April of cardiovascular renal disease.

Benjamin Anthony Daniels, Tampa, Fla.; Southern Medical College, Atlanta, Ga., 1897; aged 67; died, May 5, of coronary thrombosis.

Alexander White Richardson, Kingston, Ont., Canada; Queen's University Faculty of Medicine, Kingston, Ont., 1899; died, April 23.

Ellen F. McCarthy Mell, Detroit; Woman's Medical College of Cincinnati, 1895; aged 68; died, May 2, of cerebral hemorrhage.

John M. Boyles, Shelby, Mo.; Missouri Medical College, St. Louis, 1890; aged 82; died in May of carcinoma of the stomach.

Ulysses Samuel Craft, Nampa, Idaho; Loyola University School of Medicine, Chicago, 1918; aged 44; died, April 29.

Bureau of Investigation

MORE MISCELLANEOUS MAIL-ORDER FRAUDS

In this department of *THE JOURNAL* of July 9, page 188, brief abstracts were given of a number of medical mail-order frauds that had been debarred from the United States mails through the activity of the fraud order department of the Post Office Department. In this issue we present a few more similarly brief abstracts of additional cases:

U. C. SERVICE.—One J. A. Baer of Honesdale, Pa., promoted a medical mail-order fraud under the trade name "U. C. Service." He advertised and sold a preparation that he called "Dr. Jay's Opto-V," which was said to be for "cloudy vision," the prevention of blindness, and as a means of avoiding operations for eye affections in cases where resort thereto would be otherwise unavoidable in order to restore or preserve vision. In other words, it was advertised essentially as a cure for cataract. Chemical analysis of Opto-V by the chemists at Washington showed it to be a liquid consisting of water and glycerin and carrying, as its active agent, thuja (*arbor vitae*). Thuja contains volatile oils similar to turpentine but much more toxic. It has no therapeutic value in the treatment of cataract. After going into the case thoroughly, the government held that J. A. Baer's product would not clear the eyesight of persons suffering from "cloudy vision," it would not prevent blindness, nor would it avoid the necessity for eye operations where such operations were necessary. The scheme was declared one for obtaining money through the mails by false and fraudulent pretenses, and on March 15, 1938, a fraud order was issued against the U. C. Service.

THE HURLBURT AND DE VOE FRAUDS.—Under such trade names as "Madame De Veaux," "Wonder Sales Service," "Wonder Sales," "Wonder Service," "Quality Products," "G. M. Quality Products" and "Reliable Service Company," Wilbur L. Hurlburt and his wife, Charlotte Hurlburt, also known as C. De Voe, had been selling through the mails from Chicago preparations known as "Retardit," which was represented as capable of enabling the male to retard and control ejaculation as long as desired, and "Re-Nu-Pep Tonic," for the alleged renewal of sexual vigor in men. The preparation Retardit was found on examination by the federal chemists to be a salve made of a mixture of petrolatum and wool fat in which had been incorporated a small amount of a local anesthetic. The Re-Nu-Pep Tonic consisted of red gelatin capsules containing a brownish powder consisting of a laxative drug, probably cascara, with damiana and strychnine. No physicians, chemists or pharmacists were employed by Hurlburt or his wife. Hurlburt himself was formerly a barber, and the government reported that both Wilbur Hurlburt and Mrs. Charlotte Hurlburt had been arrested for, and convicted of, the possession of obscene literature. As the Hurlburts' scheme under the various trade names was an obvious swindle, the Postmaster General issued a fraud order June 10 against the numerous trade names listed at the beginning of this paragraph. [A supplementary order was issued July 10 against William De Voe, who had continued the business under his name.]

PROTONIK-UNIVERSAL.—J. B. Thompson of Jackson, Mich., was the sole owner of an unincorporated business carried on under the name Protonik-Universal. Thompson used to purchase mailing lists, better known to the trade as "sucker lists," of people who, at one time or another, had been foolish enough to answer advertisements for medicines or devices alleged to cure prostatic ailments. Thompson advertised that he had for sale a device that would "make any weak, painful and inactive prostate become strong, healthy and vigorous." The device in question, which was sold for \$5, consisted of a rubber squeeze bulb connected with a short metal pipe by rubber tubing, and at the end of the metal tube a rubber jacket was fastened with rubber bands. When the hand bulb was pressed, the air made a sort of rubber balloon on the end. The device was to be

inserted in the rectum, and when the bulb was pressed, it was claimed, the balloon-like inflation would massage the prostate gland. Thompson started business in 1932 in connection with one James Brown. Brown and Thompson separated, and Thompson continued to conduct the enterprise under the name Protonik-Universal, while Brown moved to another town in Michigan and operated a similar scheme under the name Prostaïd-National. Thompson was not a doctor, chemist or pharmacist and had no medical education. He was 62 years old and for twenty years had been in the fuel business. The device was declared a fraud, and on April 21, 1938, the mails were closed to J. B. Thompson and Protonik-Universal.

PROSTAID-NATIONAL.—This was the fraud mentioned incidentally in the preceding paragraph. It was conducted by James Brown from Marshall, Mich. He had a device essentially similar to the one operated by J. B. Thompson and, in addition, sold a "patent medicine" consisting of capsules known as "Proxine." Brown started the business after separating from Thompson and moving from Jackson, Mich., to Marshall, Mich. The capsules that Brown sold in connection with his bulb and tube device were a standard preparation containing a number of well known diuretics. The scheme was declared a fraud and the mails were closed to Prostaïd-National and James Brown on May 31, 1938.

HERB MEDICINE COMPANY.—J. B. Trexler of Reading, Pa., sold a fraudulent diabetes cure through the United States mails. The business was originally started by Trexler several years ago at Lewistown, Pa. In November 1935 a fraud order was issued against Trexler at Lewistown, and in August 1936 the fraud order was extended to cover the names of E. E. Breeman and William E. Temple, also at Lewistown, when evidence was obtained showing that Trexler's fraudulent scheme was being continued under those names. In August 1937 Trexler sold the business to Charles Stanley Eckenroth of Mohnton, Pa., and thereafter the business was operated under the name Herb Medicine Company and J. B. Trexler at Reading, Pa. Trexler's advertising gave persons with diabetes to understand that his treatment would bring good health to all sufferers from diabetes and would enable them to dispense with the injection of insulin and permit them to "eat and drink mostly anything" except in "very obstinate" cases. Trexler's "cure" consisted of a mixture of powdered herbs, including rhubarb, yarrow, senna, poke root, horsetail and burdock root. The instructions were that the herbs were to be brought to a boil in water and then let simmer for two hours. The principal effect of the "herb tea" thus produced was that of a laxative. As the stuff did not in any sense of the word cure or mitigate diabetes, the thing was declared a fraud, and on June 10, 1938, the Postmaster General issued a fraud order against the Herb Medicine Company and J. B. Trexler, debarring them from the United States mails.

DELTA SALES.—From Ann Arbor, Mich., Donald T. Owen and his wife conducted a fraudulent mail-order business in the sale of a preparation that was alleged to develop the female breast. Those who sent these people \$3 for the "regular size" jar of what the Owens called "Delta's Mammary" received a jar of orange-colored, perfumed cold cream consisting of lanolin, with a small amount of borax and wax. This was supposed to be rubbed into the breasts and it was claimed that it would increase the size of the breasts. The thing was an utter fraud. No physicians, chemists or pharmacists were connected with the business of Donald T. Owen and his wife. The preparation was purchased by them from a pharmaceutical house at Columbus, Ohio. Owen was a mechanical draftsman in a factory at Ann Arbor, Mich. June 10, 1938, Delta Sales and Delta Sales Company were debarred from the United States mails.

GLUCK'S "PERMANENT GOOD HEALTH."—Dr. Charles Gluck, a New York physician who was not a member of the American Medical Association, advertised and sold his book "Permanent Good Health" under the representation that it contained information on how to prevent and cure most of the diseases known to mankind. The thesis laid down in Gluck's book was that practically all diseases enter the body or arise in the upper

respiratory passages of the nose, and to combat this condition Dr. Gluck advocated the spraying of the nasal passages with an ephedrine solution followed by a second spray of a solution of mercury bichloride. Certain dietary restrictions were also a part of the "treatment." Although in Dr. Gluck's advertisements he represented that by his methods persons would be able to keep their hair, teeth, hearing and eyesight, nevertheless Dr. Gluck himself constantly wore glasses with thick lenses, had considerable difficulty in hearing, his head was practically bald on the top, and his teeth showed evidences of imperfections and decay! Dr. Gluck's scheme was declared to be fraudulent, and on June 14, 1938, the mails were closed to the "Permanent Good Health Publishing Company," the "Permanent Good Health Clinic" and Charles Gluck, M.D. As it happened, however, Dr. Gluck died of septicemia on April 23, 1938, before the issuance of the fraud order.

Correspondence

ACETANILID PAIN RELIEVERS

To the Editor:—I was called to a local hotel to treat a matron aged 28, who was working as a waitress. She had collapsed about 1 o'clock while serving lunch and complained of a severe headache in the occipital region with the pain referred down the back of her neck. She was taken to her room and when I arrived about twenty minutes after her collapse I found a semiconscious woman, pulseless, slightly cyanotic, and breathing about six or eight times per minute. I gave her, hypodermically, 2 cc. of $7\frac{1}{2}$ grains of caffeine with sodium benzoate. Almost immediately her pulse could be detected and her respirations increased. I remained with her for about one hour and left her after she was able to recognize her fellow workers and had normal respirations and a pulse of about 88. I could get no history of any recent head injury or illness. When I left her the blood pressure was about 100/60. She could not account for her attack in any way. I returned in about three hours to see her again and she said her headache was better. She had an ice cap to her neck and to her forehead. I left saying I would return to see her again in three hours. Less than half an hour later I was called to see her again and was told that she let out a scream and lapsed into a coma and could not be aroused. When I arrived this time the girl was again pulseless and was hardly breathing at all. I immediately gave her by hypodermic injection 1 cc. of coramine (Ciba) and her pulse and respirations increased but she could not be aroused. I questioned her fellow workers carefully and the only thing I could obtain from the girls was that the patient was just getting over her menstrual period and for the past three days had complained of a severe headache. For relief she had consumed numerous headache powders of the "Stanback" and "B-C" variety. Her pupils were contracted and there were no marks on her body. I asked for a consultation and Dr. R. A. Broady of Sevierville, Tenn., came. He suggested that we catheterize the patient, which we did, and the urinalysis was negative. We then gave 50 per cent dextrose solution 50 cc. intravenously and also 25 per cent magnesium sulfate solution 20 cc. intravenously with no result. The patient never regained consciousness and died about 7:45 p. m. Dr. Broady and I came to the conclusion that she had an acetanilid poisoning due to overdosing herself with these headache powders. Permission for an autopsy was denied.

The self medication with these powders is very common in this section of the country, as they are purchased in any store at the price of six for 25 cents. Because of the acetanilid content they are no doubt a menace to health and life. I

thought this case was worth reporting, as acetanilid poisoning may be more common than one may expect.

JOHN A. CONROY, M.D., Gatlinburg, Tenn.

COMMENT.—A bulletin issued by the Food and Drug Administration in March 1931 reported that consignments of "Stanback Headache Powders" and "B-C for Headache and Neuralgia," seized in interstate commerce, bore false and fraudulent claims in or on the trade packages. According to the government chemists, each Stanback powder in the specimen analyzed contained 2.1 grains of acetanilid, 5.8 grains of acetylsalicylic acid, 11.6 grains of potassium bromide and caffeine (amount not named).

The same chemists reported that the powders in the specimen of B-C that they tested each contained 3.82 grains of acetanilid, 6.64 grains of salicylic acid and 12.04 grains of potassium bromide.

CALCIUM METABOLISM AND TEETH

To the Editor:—In THE JOURNAL, March 19, appeared an article by Isaac Schour, D.D.S., Ph.D., entitled "Calcium Metabolism and Teeth." Schour first presents an excellent review of experimental work done for the purpose of determining the effect of certain nutritive and endocrine factors on tooth enamel and comments on the views of various workers as to the susceptibility to decay of hypoplastic enamel. He then states his own conclusion that hypoplastic enamel is not susceptible to decay.

Schour next discusses tooth calcification in relation to eruption, pointing out that this process is practically complete by the time of eruption. He then presents evidence to show that the tooth after eruption is not a storehouse from which calcium can be withdrawn to satisfy body needs and from this draws the conclusion that, in pregnancy, fetal demands do not cause calcium withdrawal and that for this reason pregnant women's teeth are no more subject to dental caries than those of non-pregnant women.

This article was so carefully prepared that it gives the impression of being both comprehensive and conclusive. For this reason, and without desiring to detract from its many excellent features, I feel it is necessary to call the attention of your readers to other evidence which tends to modify Schour's conclusions—conclusions which might, if accepted, have possible unfortunate effects on medical practice.

Space will not permit an extended presentation of my views and for this I will refer those who may be interested to an article entitled "The Influence of Metabolism on Teeth" by myself and Krasnow, soon to appear in the *Journal of Pediatrics*. Briefly, however, I would say that Schour's implication that we need not be concerned about the metabolism of the developing tooth, because hypoplastic enamel is not especially susceptible to decay, is not to be accepted without qualification. Hypoplastic enamel in permanent teeth is susceptible to decay or not depending on the severity of the defect, while hypoplastic enamel in deciduous teeth is very susceptible to decay.

With reference to the susceptibility of hypoplastic enamel and also of teeth during pregnancy, evidence is accumulating to show that at any time of life the general metabolism affects the teeth and largely determines whether or not they will decay. Thus the effect of pregnancy may be to create or accentuate a metabolic disbalance, which in its turn may create or accelerate a tendency to caries. This metabolic disbalance may be determined in a number of ways; one of the most direct is the coordinated analysis of general health, food intake and the saliva as developed by Krasnow.

In conclusion, may I suggest that medicine and dentistry both have much to gain by a broad extension of researches now under way into the factors that influence the inception of dental caries.

JOHN OPPIE MCCALL, D.D.S., New York.
Director, Murry and Leonie
Guggenheim Dental Clinic.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

INSOMNIA FROM NOISES

To the Editor:—A woman aged 35 and all the members of her family have always required and obtained about nine hours of sleep a night in a reasonably quiet place. Seven years ago she moved to a noisy location and was constantly awakened at night. She therefore began to use ear plugs (Flents) which excluded most ordinary air-borne noises, but with them in her ears she became aware of and was awakened by bone conducted noises, such as the slamming of doors or closing of windows in adjacent apartments on her floor and even one or two floors below. She soon moved to the most quiet location that she has been able to find but ever since then the ordinary noises in her room, even with the windows closed, wake her numerous times in a night unless she uses ear plugs. She has therefore never discontinued their use. Even when she uses the plugs, there are frequently nights when she suffers severely from insufficient sleep because of the bone conducted noises. 1. Are there any reports of such cases? Please give references. 2. Should I advise her to stop using ear plugs? Would she in time be able to sleep better without them than she now does with them? How long would it take to accomplish this? Would she be able to stand the strain of the insomnia in the transition period? 3. Is there any successful method of shielding her from the bone conducted noises which awaken her when not using the plugs? Sound proofing a room has been considered but it has not yet been done because of the expense and uncertainty whether it would be practical and effective for this patient. 4. Would psychoanalysis effect a cure? 5. Are there any other solutions of the problem? Hypnotic drugs were tried but were soon found ineffective and unsatisfactory and were discontinued.

M.D., New York.

ANSWER.—The problem is essentially one involving the inhibition of attention and not a problem of hearing. The difficulty would be more likely to be associated with the adjustments that attended the change of residence rather than with some specific difficulty in sensitivity to noise.

1. Such cases of mild degree and of temporary duration are not uncommon, but specific references are not available.

2. The ear plugs should not be used if they produce irritation of the ear canal. The discarding of the plugs would depend on the reaction of the patient.

3. There is no inexpensive method of shielding from bone conducted noises. Sound proofing involves tremendous expense when the room must be shielded from noises conducted by the building frame.

4. The services of a neuropsychiatrist should be invaluable.

5. Sedative drugs should be of value. The drugs previously used are not mentioned. Phenobarbital would probably be much less effective than the bromides or sodium amylal.

PNEUMONIA SERUM IN CHILDHOOD

To the Editor:—Is there any contraindication to giving pneumonia serum to children under 12 years of age? The available medical literature indicates that it is not recommended for children in that age group.

M.D., South Dakota.

ANSWER.—There is no contraindication to the use of serums in the pneumococcal pneumonias of children under the age of 12. Serum reduces mortality, complications and days of illness. The mortality of the pneumonias is greatly influenced by age. It is much higher under 2 than between the ages of 2 and 12. Many pediatricians have not thought it worth while to give serum to children in the latter age group because the mortality is so much lower among them than among adults. Before the age of 2 most primary pneumococcal pneumonias are due to pneumococcus types XIV, VI and XIX. After the age of 2 the type I pneumococcus is most frequent.

Experience with serums for various types of pneumococcal pneumonias has been given by Jesse G. M. Bullowa in his "Management of the Pneumonias," Oxford University Press, New York, 1937, and in published papers. His experience has been corroborated by R. L. Nemir (Treatment of Pneumonia in Infants and Children with Antipneumococcus Serum, *J. Pediat.* 3:827 [Dec.] 1933) and by Kereszturi and Hauptmann (The Serum Treatment of Pneumonia in Children, *J. Pediat.* 4:331 [May] 1934).

The procedure for the treatment of pneumonias in childhood is outlined herewith.

When sputum is available it is typed. If there is no sputum, pharyngeal or laryngeal cultures are made in broth, or lung suction may be done. Gastric aspirate or vomitus may contain flecks of mucus from the lung and the contained pneumococci may be typed. Serum therapy is instituted after skin and eye tests.

In infants (under 2 years of age) intramuscular injections may be used unless bacteremia is present; in children (over 2 years) intravenous administration is preferred. With large doses the blood may be cleared by intramuscular administration, though when it is possible bacteremia should be treated with intravenous serum.

The projected dose is calculated by weight in proportion to that for adults and for intramuscular use the dose is doubled. Above the age of 2 the dose is about 100,000 mouse protection units intravenously; it varies from 60 to 150 thousand. By the intramuscular route (infants) the dose varies from 40 to 120 thousand. The total projected dose is administered as soon as possible. Five cc. is the usual initial dose by either route. The second dose is given in two hours, and when given intramuscularly an attempt is made to give the total dose at that time. Using both buttocks, one may give 50 cc. The dose may be repeated in from four to eight hours if judged necessary. A drop in temperature to normal is expected in twenty-four hours if specific serum has been used. When horse serum is used, adequacy of treatment may be checked by agglutination tests after twelve hours. Rabbit serum may be checked by the Francis test. The actual unitage in some serum packages is larger than that on the label. The schedule given is based on the actual unitage.

CHEILITIS OF LIPS

To the Editor:—A man, aged 26, whose only complaint at the time was enlarged tonsils, had the tonsils removed in January 1936 by a competent specialist. Recovery was normal until the tenth day after operation, when he began to notice that the skin of his upper lip became white and peeled off in a thick layer. The lower lip soon took on the same color and peeled as did the upper lip. Since that time his lips have troubled him much with burning and stinging sensations and a feeling of swelling; he states that at times actual swelling takes place. The tongue is not affected. There is a bad taste in the mouth which he has not been able to describe, but it is not metallic. He had amalgam fillings in several teeth when the trouble began but had them all removed with no beneficial result. One gold crown in front has made no difference in the symptoms. His general health has remained excellent. The diagnoses considered have been cheilitis exfoliativa and glandularis, congenital syphilis with nerve involvement (all tests have been negative and a therapeutic test with ten injections of bismuth salicylate did no good). I tried to put the blame on the tonsillectomy but could not. In the severe crusting stage, when the patient neglects the lips and fails to apply some emollient cream, one must think of lupus erythematosus. The dental fillings were suspected as the cause till their removal, when he failed to improve. I should appreciate your opinion as to the possible diagnosis and the cause of this patient's symptoms (stinging, burning and feeling of swelling of the lips). Could this trouble have been caused by the tonsillectomy? Could it be due to sensitization to foods (elimination diets were tried but cooperation was poor)? Tooth paste was eliminated as a cause. Do you think that roentgen treatment to the lips would help, and if so what dosage would be best? Can you suggest any line of treatment which might help the condition?

M.D., South Carolina.

ANSWER.—The disorder this man has on his lips is probably cheilitis exfoliativa or perhaps cheilitis glandularis. The periodic swellings that occur speak more for cheilitis glandularis, but certain characteristics of this disorder are lacking in the history. There is a tremendous increase in the size of the glands of the lips to the point at which they can be felt as tiny hard nodules the size of a pinhead. Their orifices are patulous, exude a mucoid or serous fluid which dries into crusts and admit a fine probe for an appreciable distance. Gluing of the lips, especially during sleep, takes place. Suttan, who studied this condition, thought that there was a congenital increase and hypertrophy of the glandular elements followed by atrophy.

The more likely diagnosis in this case is cheilitis exfoliativa, which, many observers feel, is a form of seborrhea or seborrheic dermatitis. Ayers thinks that some cases are due to ultraviolet rays. There is often accompanying seborrhea of the scalp. As in the case of this man there is exfoliation of scales and crusts, which may sometimes be quite thick. A neurotic element may be present compelling pulling and working with the crusts until they are removed together with new epithelium, exposing a reddened, fissured surface, at times bleeding. The patient may be given to licking of the lips as in perlèche, to allay the burning, drying feeling present.

Lupus erythematosus may be ruled out. The scales in this disorder are closely applied and do not exfoliate in the manner described. Neither is there crusting or swelling such as this patient has. Lupus erythematosus does not gain such large

proportions suddenly; there should be some evidence of atrophy by this time and there would likely be, though not necessarily, other typical areas involved in addition, such as the butterfly area of the face.

Were this disorder due to electrolytic currents set up by Dissimilar metals in tooth fillings, there would probably be lesions present in the mouth, particularly at the sides of the tongue. It is difficult to conceive of their action on the lips, particularly when dried out, in preference to the nearer and moister capillary spaces between the tongue and the cheeks. A cheilitis of such duration could hardly be a sequel of a tonsillectomy. There could be inflammation for a short time resulting from sensitivity to a local anesthetic. Other causes of such intolerance to contact substances, such as tooth paste, seem to have been eliminated. A further search in this direction is indicated, the greatest care and prolonged observation being necessary to eliminate all possible irritants. The subject should keep a diary wherein he records his activities minutely and from this materials for trial and elimination will suggest themselves.

Active treatment may take the form of that for seborrhea. A sulfur ointment, from 0.5 to 3 per cent, may be used. The scalp should receive care simultaneously. X-rays are frequently useful, at least temporarily. These should be used in fractional doses, from 75 to 87½ roentgens once a week. If material aid is not had from their use, the number of exposures should not exceed six or eight. Otherwise as many as twelve treatments may be given. Radium may be used similarly. If sulfur irritates, soothing cooling applications may be used instead, such as cold cream in which is incorporated from 0.25 to 1 per cent menthol or 0.5 to 1 per cent phenol.

QUININE DIHYDROCHLORIDE IN PNEUMONIA

To the Editor:—During the last three years I have been using quinine dihydrochloride 0.5 Gm. (7½ grains) intramuscularly twice daily in the treatment of bronchial and lobar pneumonia. The following observations have been made: 1. The temperature comes down by lysis in both types of pneumonia. 2. No abdominal distention or complications were noted following pneumonia. 3. Apparently it helps to eliminate or destroy toxins, protecting the heart from these effects or toxins; the heart muscle is stronger with this drug, especially when digitalis is used. 4. Intake of fluids should be from 3,000 to 4,000 cc. daily to take up the loss from sweating, which occurs when this drug is being used. No ill effects were noted from sweating. The patients do better; pulse volume and heart sounds are stronger; fever does not reach its first height following chill. 5. It does not shorten the disease, but no ill effects or reactions from its use were noted. Patients do not seem to be so toxic when this drug is being prescribed. My last four patients with bronchial pneumonia have recovered under this treatment. In a recent case of a doctor, aged 72, following a forty-five minute chill, bronchial pneumonia developed in the right lung. The temperature was 104.2, the pulse rate 30. The following day a second chill occurred and bronchial pneumonia developed in the left lung. Temperature was 102, pulse rate 105; respiratory rate 30. Quinine dihydrochloride was given fifteen minutes after the first chill and the temperature fell to 98. Quinine dihydrochloride was given twice daily. The highest point in his fever following the second chill was 102, but the fever leveled off and came down by lysis. What effect has quinine dihydrochloride on the pneumococcus, capsule, toxins and the heart?

M.D., West Virginia.

ANSWER.—The statements made concerning the effect of quinine dihydrochloride in four cases carry little conviction because the patients treated lack adequate controls and laboratory study. The drug may have had no influence on the disease.

The effect of treatment in a given condition can be evaluated only when the results are compared in treated and untreated cases and the patients compared are suffering from the same condition and are equally ill. In a disease which tends to terminate in many instances without treatment and to vary in duration, a sufficient number of patients receiving and not receiving the treatment to permit statistical comparison must be observed. The precise nature of the disease must be known or different conditions may be included in the comparison. If the number of cases are so few that the fate of a single case alters the result, no inference can be drawn.

The inquirer does not give sufficient data to establish a precise or complete diagnosis of his patients with pneumonia. The occurrence of two chills and tandem invasion of lobes is infrequent in bronchopneumonia. In view of the fact that the pulse never exceeded 110 and the respiratory rate was never more than 30, the infections were apparently not severe. In judging the condition of a patient with pneumonia, acceleration of the pulse is usually more significant than a high temperature. There is no record of a blood culture. This is positive in 70 per cent of patients gravely stricken. Blood cultures are necessary to judge the severity and the effect of a treatment for pneumonias.

In a dilution of 1:2,000, quinine dihydrochloride killed a pneumococcus on which it was tested. The dose of quinine dihydrochloride (0.5 Gm.) would not have killed pneumococci if they were present in the blood, because 0.5 Gm. would have given at most only a 1:10,000 dilution in the blood serum (even if present quantitatively). This concentration of quinine dihydrochloride does not interfere with the growth of pneumococci. There was no noticeable effect on the capsules of the killed pneumococci; they swelled in contact with homologous typing serum.

Toxins of the pneumococcus have been discussed by Benjamin White in *The Biology of Pneumococcus* (Commonwealth Fund, pp. 93 to 101). He summarizes the matter saying "While it is possible that a true toxin may be a constituent of the pneumococcal cell or a product of its metabolic processes, until more convincing evidence is presented, it would seem reasonable to look upon these so-called 'toxic' effects as being referable to the action of bacterial protein poisons." No studies on the effect of quinine dihydrochloride on the so-called toxin have been found.

The effect of quinine on the heart depends on the dose. Quinine dihydrochloride is a protoplasmic poison and quickly killed mice when injected intraperitoneally in sufficient amount. In small doses it may have a stimulating effect.

LOOSE STOOLS AFTER COLOSTOMY

To the Editor:—A woman, aged 71, has a permanent colostomy following a radical one-stage operation for cancer of the colon. Further operations were refused. Colostomy bags were attempted and replaced by ordinary cellulose dressings and a tight binder. The stools are liquid in spite of a strict limitation of fluids and a rigid nonresidue diet. Different drugs were used to alter the stools, such as kaolin, charcoal, iron ammonium citrate and finally bismuth subnitrate in doses up to 60 grains (4 Gm.) a day. The latter worked well for about three months but now there seems to be some irritation, for there is much mucus in the stools. I have looked up the literature and found nothing suggested other than the drugs mentioned to help thicken the stools. Can you suggest something?

M.D., New Jersey.

ANSWER.—It is possible that the cancer has extended to the mesenteric glands and is interfering with the circulation of the colon. This may make any kind of treatment to produce a solid stool impossible. Nothing is said in the query about the limitation of fruits and vegetables. If this has not already been tried, it would be best to omit them entirely for a few weeks. Sometimes tincture of opium in doses of from 0.6 to 1 cc. after each meal is of benefit. The dose can be reduced as the condition improves. At times there may be a reduced secretion of hydrochloric acid, and if so it would be a factor in keeping up the diarrhea. Hence the patient may be given 20 drops of dilute hydrochloric acid half an hour after each meal. This is best given in half a glass of water.

DANGERS OF BAKELITE

To the Editor:—A man with a deafness which recently has become acute resists the usual treatment. He works for the Bakelite Company in the manufacture of a preparation called Heka, a plastic made from ammonia and formaldehyde. The urine is 1-plus for albumin. The white blood cells are shown in clumps. The Wassermann reaction is negative. As this case resists the usual treatment, what is the effect of drugs used in doing plastic work, such as ammonia and formaldehyde? Would a blood examination show any evidence of poisoning?

B. M. HOWLEY, M.D., New Brunswick, N. J.

ANSWER.—In the manufacture of bakelite and several other synthetic resins, one constituent is hexamethylenetetramine, probably known as "hexa" or "hex" but not as "heka." This substance is or is akin to methenamine, widely used in medicine under various names. "Hex" is made from the action of ammonia on formaldehyde. Its manufacture long has been associated with occupational dermatitis and in the manufacture both of raw bakelite and molded objects of bakelite the same type of dermatitis is well known. In addition to hexamethylenetetramine, the following substances, among others, are ingredients of bakelite: phenol, formaldehyde, nigrosin, dimethyl-orthocresol and wood flour. In addition to chemical action at orders of the upper respiratory tract due to chemical action at intervals affect more than 50 per cent of exposed workmen. Infectious concomitants that may be associated with hearing deficiency may arise. One type of bakelite as used may be dissolved in benzene (benzol). For this reason blood examinations are advisable for workers in bakelite. In the present instance, blood work will probably reveal less than may be gained through cutaneous patch tests and urine determinations for the presence of formaldehyde derivatives. Ammonia as used in the manufacture of hexamethylenetetramine leads to

edema of the respiratory tract as its characteristic manifestation of injury. Such edema might be associated with deafness, but deafness as the sole manifestation of chemical injury is unusual. In dusty trades such as the one under discussion, impacted cerumen is the commonest cause of occupational deafness.

SUDDEN DEATH OF TRUCK DRIVER

To the Editor:—As coroner I was called following the death of a boy, aged 23, weighing about 180 pounds (82 Kg.), 5 feet 11 inches (180 cm.) tall. He was a truck driver, having a route from Cedar Rapids to Chicago. He stopped in our town, where he usually gets a good-sized meal. He came into the restaurant, complaining of shortness of breath and perspiring. He went into the kitchen, sat down, drank half a glass of water, and rested for approximately ten minutes and was then relieved. He ate a ham and egg sandwich and drank a cup of coffee and went back to his truck. After moving the truck about half a block, he apparently was unable to steer it well and side-swiped a pole. The sound of the impact was heard by a policeman, who rushed to the scene and heard the driver screaming and waving his arms. He was unable to answer the policeman's questions. The officer, with help, assisted him out of the truck cab and laid him on the sidewalk, where his screaming became weaker and his breathlessness dwindled, and then he died, all within a few minutes. Autopsy revealed a moderately dilated right auricle, a flat subepicardial hematoma 1 inch in diameter over one of the branches of the left coronary vessel on the left ventricle and moderate left coronary sclerosis for about 2 inches from the opening of the left coronary vessel but no occlusion. The actual cause of death was not determined. The man had complained that the cab of the truck was full of gas and had said that this would be the last trip in this truck before it was repaired. Two weeks before his death, on arriving home in the morning from a trip, he complained to his wife that he had an ache in his left arm, refused his breakfast and went to bed, and awoke later feeling normal. It was understood later that it was not carbon monoxide or exhaust gas that he was complaining of. It was said to be the gas from partially burned cylinder oil. Will you please inform me whether there is a gas produced by raw unburned cylinder oils which could cause shortness of breath? It is said that the trucks have a very rich mixture on the carburetor and that this mixture combined with an oil pumping motor in an old machine will produce this form of gas, with which I am not familiar. I have heard that the first stage of this gas is drowsiness and headaches; later the victim complains of being deathly sick and of heart pounding, and it even results in death. I understand also that this gas seldom arises from a new machine or motor but occurs mostly in worn-out or old motors. Can you offer a possible cause of death?

L. O. RIGGERT, M.D., Clinton, Iowa.

ANSWER:—The death was probably of coronary origin. The history of pain in the left arm two weeks before death, the left coronary sclerosis, the subepicardial hemorrhage over the left coronary artery and the manner of the death so indicate. Even the age is no longer remarkable. The immediate cause of death was probably coronary spasm (Leary, Timothy: *Ann. Heart J.* 10:338 [Feb.] 1935).

The gases produced by the breaking down of cylinder oil are hydrocarbons, which may be toxic. The psychic influence of a gas phobia may have helped to precipitate the coronary attack.

ROENTGEN THERAPY AFTER HYSTERECTOMY FOR CANCER

To the Editor:—About seven weeks ago a white woman, aged 35, underwent a hysterectomy. According to the patient, a diagnostic curettement was first done and the laboratory examination showed an early carcinoma of the corpus uteri. The surgeon advised high voltage roentgen therapy on her return home, and the family requested me to make arrangements for this. I called two x-ray specialists and both said that the treatment was advisable; one, however, recommended twelve treatments and the other twenty-six. I presume the latter will use more conservative dosages. The patient is none too strong and also is having intermittent attacks of cholecystitis. She is not emaciated or losing weight. However, as the result of a stitch abscess, the hysterectomy incision is still draining somewhat and healing slowly. Please advise whether you think high voltage roentgen therapy necessary, also which type to take, the twelve or twenty-six treatments?

M.D., Indiana.

ANSWER:—In cases of carcinoma of the cervix, intensive high voltage roentgen therapy is advocated as a routine by most gynecologists. Until relatively recent times, too favorable a prognosis has been rendered in cases of carcinoma of the body of the uterus, for statistics now reveal that there is not more than approximately 50 per cent of permanent cures. With realization of the somewhat dubious prognosis, and with appreciation of the frequent spread of cancer fragments through the tubes and consequent tendency to invasion of the ovaries and adjacent peritoneum, roentgen therapy has been regarded with considerable favor as an adjunct to operative removal. The extent of the growth and the likelihood of regional metastases

may be the controlling factor in deciding whether roentgen therapy is advisable. If resorted to, the wound should be well healed before irradiation is begun.

Roentgen therapy for cancer of the body of the uterus is much the same as for carcinoma of the cervix. Until recently, from six to ten treatments were deemed sufficient. Now it is customary to give from twenty to twenty-five treatments, according to the Coutard technic.

"Coutard technic" is an intangible expression, for Coutard emphasizes individualization in roentgen therapy and is elusive in stating the details of his special technic. The essence of the treatment is high voltage administration of numerous small doses so that the total dosage is unusually large. The individual treatments are given at short intervals, usually of a day, and the intensity per unit of time is quite low.

HAY FEVER FROM TREE POLLENS

To the Editor:—A woman aged 21 with spring hay fever starting April 19 has the following cutaneous reactions: white oak, 4 plus; post oak, 3 plus; bur oak, 1 plus; red oak, 1 plus; mulberry, 1 plus; white ash, 1 plus; tag; alder, 2 plus; black birch, 1 plus; black locust, 1 plus; ironwood, 3 plus. She is a resident of western Massachusetts. Is it necessary to include all these pollens in making up her extract?

M.D., Massachusetts.

ANSWER:—It is assumed from this inquiry that the symptoms are limited to April and May. The most important pollens mentioned are the various oaks, birch and ash. The others are less important, either because the amount of pollen that is produced is small or because the distribution of the trees is not general. The least important of the group mentioned are mulberry and black locust.

According to most authorities the various types of oak are closely related, so that a mixture of all of them or the one which is the most prevalent in the vicinity may be used for treatment. One must emphasize, however, that hay fever due to trees is much more of a local problem than that due to grasses or weeds. For that reason, while the pollen of ironwood is generally not considered an important one for most people, it may be an important factor in this particular case, if such trees are near the patient's home, especially in her yard. A tree immediately outside the patient's window, while an unimportant factor to others, may be a significant cause of symptoms for the patient.

It is therefore necessary, in addition to knowing what are the important pollens in a vicinity in general, to determine the pollens in the vicinity of the patient's immediate environment. A patient who is sensitive to unusual pollens found largely about her home will have more symptoms when at home than when she is away from this vicinity. If this sort of condition exists, the pollens found about the environment should be added to those which are of general prevalence in the vicinity.

DERMATITIS FROM POTASSIUM MERCURIC IODIDE SOLUTION

To the Editor:—Following an operation on the urethra for which the skin was sterilized with 1:1,000 solution of potassium mercuric iodide, there appeared in a few days in the folds of the buttocks, also on the scrotum and penis, where they had been in contact, superficial skin ulcerations, especially where the folds of the skin had been in contact. This developed into a painful condition and required several weeks to heal. Has this particular sterilizing agent been known to produce skin reactions in certain persons, especially where skin folds retard normal evaporation?

PAUL B. NUSSBAUM, M.D., Cape Girardeau, Mo.

ANSWER:—Potassium mercuric iodide is well known as the source of occasional dermatitis following its use for germicidal purposes. Prosser White categorically states that "potassium mercuric iodide, a local antiseptic, is irritating." The incorporation of this substance into germicidal soaps has led to reports of dermatitis. The usual explanation associated with these happenings is that of highly increased susceptibility or sensitization. Undoubtedly these influences account for certain cases. In addition, it may be pointed out that some instances of dermatitis probably are produced by increased concentration of the disinfectant as the result of evaporation. It is conceivable that actual crystals of mercury compound might be produced and continue to lie within the folds of the skin under some circumstances. No peculiar significance is to be attached to potassium mercuric iodide in this situation, as almost any other disinfectant of similar nature might behave in the same manner. As a rule, this type of disinfecting agent, after a sufficiently long contact with the skin for antiseptic action, should be washed with sterile water or other suitable liquid. In the present

instance the existence of highly increased susceptibility of the skin of the patient to the action of potassium mercuric iodide may possibly be established through appropriate patch tests, the 1:1,000 solution being employed as a test material.

PRESCRIPTIONS FOR CHLORAL HYDRATE AND BROMIDES

To the Editor:—According to Dr. Fantus, it should not be necessary to prescribe ill lasting medicine in this day and age. In my practice I have frequent occasion to use chloral hydrate and sodium bromide, both separately and together, by mouth and by rectum. How can these drugs be put in a vehicle in such a way that their taste is not obnoxious? What is the best vehicle to use for each and for the two when used together? Is it poor pharmacutics to use chloral hydrate in alcoholic solution? I have not found ammonium chloride in syrup of citric acid very palatable, either. Is this the best which can be done with that very useful drug?

T. G. HARVEY, M.D., Mars Hill, Maine.

ANSWER.—The disguising value of glycyrrhiza is well illustrated by the following prescriptions, which are perhaps as palatable as liquid preparations for these various drugs as can be secured, provided a pleasant fluidextract of glycyrrhiza is used. Some glycyrrhiza preparations that are made from a drug that has not been properly stored and has become sour are actually offensive to the taste and are of no disguising value.

Chloral Hydrate

R Chloral hydrate	20.0 Gm.
Fluidextract of glycyrrhiza	60.0 cc.
Syrup of glycyrrhiza	to make 120.0 cc.

Mix & label: Teaspoonful in water at bedtime.

Potassium Bromide

R Potassium bromide	30.0 Gm.
Water	30.0 cc.
Syrup of glycyrrhiza	to make 120.0 cc.

Mix & label: Teaspoonful in glassful of milk after meals and at bedtime.

Chloral Hydrate and Potassium Bromide

R Chloral hydrate	20.0 Gm.
Potassium bromide	30.0 Gm.
Water	15.0 cc.
Fluidextract of glycyrrhiza	15.0 cc.
Syrup of glycyrrhiza	to make 120.0 cc.

Mix & label: Teaspoonful in glassful of milk at bedtime.

It is generally best to avoid the addition of alcohol to solutions of chloral hydrate, especially in the presence of bromide, because there is a liability of the salting out of water-insoluble chloral alcoholate.

Ammonium Chloride

R Ammonium chloride	10.0 Gm.
Syrup of glycyrrhiza	to make 120.0 cc.

Mix & label: Teaspoonful in half a glassful of water every two hours.

SIND DIET AND URINARY LITHIASIS

To the Editor:—An article in the *Reader's Digest*, March issue, on what to eat, stated that in northern India many people have stones in the kidneys from the Sind diet. Will you please inform me of what the Sind diet consists?

C. P. ROBBINS, M.D., Winona, Minn.

ANSWER.—Dr. V. G. Heiser's original article was published in *Collier's* for Oct. 10, 1936, and referred to research done by Col. Robert McCarrison of the Indian Medical Service. A summary of this work, entitled "The Causation of Stone in India," was published in the *British Medical Journal* 1:1009 (June 13) 1931. A somewhat more condensed report appeared in the *Lancet* 1:1413 (June 27) 1931. Two sets of factors (apart from infection and foreign bodies in the urinary tract), according to McCarrison, are concerned in the causation of stone: negative—vitamin A deficiency, phosphate deficiency; positive—an unknown substance existing in differing amounts in various cereals, excessive lime in the diet. He reports that cereals vary widely in their alleged stone-producing properties, with wheat and millet the most potent and rice the least. In the Sind district millet is the chief crop raised and consumed. Among the more well-to-do classes it is reported that the diet contains sufficient milk and milk products, green vegetables, legume sprouts and fruit to overcome the stone-producing tendencies of the cereal consumed. McCarrison writes:

The great fault of all Indian dietaries among the poorer classes, who are the chief victims of stone, is that their diets do not contain anything like enough milk and milk products, and I postulate that, according to the kind and quality of the cereal grain they use as the staple of their dietaries, and according to the poverty of these dietaries in milk and products of milk, so they will be more or less likely to suffer from stone.

However, McCarrison points out that in India the high peak of incidence of stone occurs among young children, as it does among young experimental rats on deficient stone-producing

diets. In this respect the incidence of stone in India differs from that in England and the United States, where it appears largely in the later decades. McCarrison again writes:

Many factors may account for stone production in later life: stone formed in early life may be endured to later life; stagnation of urine due to enlarged prostate may cause it, or infection. . . . It seems to me that all three agents—dietetic, infectious and physicochemical—play their part in the genesis of stone and in defining its architecture; on occasion, and in certain individuals or in certain places, the star part may be taken by one or by the other. In India the star part is taken by diet.

The Council on Pharmacy and Chemistry has published a report on "Vitamin A and the Urinary Lithiasis" (*The Journal*, Dec. 14, 1935, p. 1983) which should also be consulted in this connection.

DERMATITIS FROM RED SQUILL

To the Editor:—A man, aged 30, had a maculopapular rash, which started on his hands and then quickly spread over his entire body and was accompanied with a great deal of itching. After careful investigation, it was found that he had been handling a rat poison called "Red Squill." Under symptomatic treatment, the condition improved rapidly. What is red squill? Have you heard of similar eruptions caused by it?

M.D., Wisconsin.

ANSWER.—Red squill (*Urginea maritima*), called sea-onion, belongs to the lily family. It grows wild among the hills bordering the Mediterranean and cannot be distinguished botanically from the white variety, which is official in various pharmacopeias and is used in human medicine as a heart tonic. Red squill has all the constituents or glucosides which have not been isolated and identified. Apparently the property of both varieties, though essentially nontoxic, are irritating to the skin and cause a stinging sensation, caused by calcium oxalate raphides (Leaflet 65, published by the Department of Agriculture, for sale by the Superintendent of Documents, Washington, D. C., for the price of 10 cents).

DERMATITIS FROM STOCKINET UNDER CAST

To the Editor:—In two cases treated by plaster casts for fractures of the arm, glazed cotton was first applied, remaining for four weeks. When the casts were changed, the skin in both cases was found to be in good condition. The casts were reapplied over stockinet purchased for the purpose. Two weeks later both patients developed a severe weeping dermatitis, which required a rather prolonged treatment before clearing up. I have used stockinet for nearly twenty years and this is my first experience with dermatitis. Please let me know what stockinet contains that could give such a skin lesion and whether this condition is rare or occurs frequently.

M.D., Virginia.

ANSWER.—Inquiry into the composition of stockinet used for covering extremities before the application of plaster casts discloses the fact that it is made of cotton without the addition of any other substance such as glazing material and without the addition of dye. Such a material would be extremely unlikely to cause a dermatitis. If dermatitis to pure cotton were a likely result, it would be seen frequently merely from the use of cotton garments, particularly undergarments.

It is the general belief of orthopedic surgeons that when dermatitis occurs under the conditions mentioned it is most likely due to the irritation from friction, perspiration or soiling or wetting of the skin. In case of doubt the question can be more definitely cleared up by making a patch test with a piece of stockinet. This is done by placing a small piece about one-half to one inch in diameter on the back and covering it with adhesive tape, allowing it to stay on for forty-eight hours. If there is definite erythema, edema and vesiculation, the patient is actually sensitive to that material.

BARTHOLOINITIS

To the Editor:—What is the incidence of Bartholinitis in virgins, or is it always a result of sexual contamination?

M.D., California.

ANSWER.—Bartholinitis nearly always occurs in women who have had sexual intercourse. It is rare to observe this condition in a virgin but it is conceivable that it may occur in young girls afflicted with gonorrheal vulvovaginitis. The duct of Bartholin's gland is about 0.5 mm. in diameter and any irritation, such as a gonorrheal infection, diphtheritic involvement or other condition which produces a vaginitis and vulvitis, might bring about an agglutination of the walls of the duct, thereby preventing the escape of the gland contents. If the infection is virulent, an abscess will result.

Bartholin cysts and abscesses may occur in the absence of a gonorrheal infection. Cysts particularly may result if scar tissue from childbirth injuries should obstruct the duct of the gland.

SULFUR AND LEAD IN HAIR DYE

To the Editor:—I have had a number of requests for a prescription that will restore gray hair to its normal color. Usually patients ask for something for their dandruff as well. I have prescribed:

Plumbi acetatis	drachm	jss
Sulfuris praecipitatis	drachm	jss
Acidi salicylici	drachm	j
Mentholis	grains	xxx
Bay rum	fl. oz.	ij
Aquae rosae	fl. oz.	xij

M. Sig. Apply to hair and scalp every second or third day. The sulfur does not go into solution and the prescription bears a "shake" label. Will you please criticize the prescription or tell me how it may be improved. The best results are obtained apparently in cases in which the hair is dark. Those with light hair, I notice, have the hair colored somewhat yellow from the preparation.

M.D., Minnesota.

ANSWER.—This method of dyeing hair by the interaction of sulfur and lead is time honored but has always been frowned on because of the possibility of chronic lead poisoning. Evidently it seldom causes enough toxicity to lead to any decided symptoms, or reports of such cases would be more common, for the number of people applying such lead dyes habitually is enormous. However, it may be possible that many of those using the dye are suffering from lead poisoning without knowing it. It would be wise to make periodic blood examinations for stippling of the red cells in all those using this sort of hair dye. If the prescription as given produces the desired results, no improvement is necessary. Any method based on the formation of lead sulfide in the hair will fail to dye light hair well.

ACTION OF SEDATIVES ON SPHINCTER OF ODDI

To the Editor:—It has recently come to my attention that morphine causes spasm of the sphincter of Oddi and is therefore contraindicated during x-ray examinations of the gallbladder. Has there been any work done on the action of barbiturates and other sedatives in this connection?

B. F. COOK, M.D., Rutland, Vt.

ANSWER.—The effect of barbiturates on the sphincter of Oddi of human patients has been studied by Walters, McGowan, Butsch and Knepper (*THE JOURNAL*, Nov. 13, 1937, p. 1591). Phenobarbital has no effect on the normal sphincter or on the contraction of the sphincter caused by morphine. Drugs, other than sedatives which relax the sphincter, are to be found in the article referred to. Westphal has also used bromides in the management of patients with biliary dyskinesia (*Ztschr. f. klin. Med.*, 96:22, 52, 95, 1923).

OPERATION FOR LUXATION OF TENDON

To the Editor:—A pianist has a periodic luxation of the tendon of the extensor pollicis brevis. On hyperextension of the thumb, the tendon slips dorsally over the edge of the radial head with great pain. It is easily replaced. Please discuss the treatment of this condition.

H. SPENCER HOYT, M.D., Monterey, Calif.

ANSWER.—A plastic operation on the hand would probably cure the condition. It may be possible for a simple strapping of the wrist to give the patient relief (the strapping to be done in flesh-colored adhesive plaster and applied in a figure-of-eight, which is called a spica adhesive strapping). It may permit this pianist to perform his activities without slipping of the tendon. The operation described by Ellis Jones for slipping of the peroneal tendon at the outer malleolus might be applicable in this case. In this operation a fascial loop is made to prevent slipping. In the case of the extensor pollicis brevis, a little strip of fascia could be used to tether the tendon and prevent its movement to a point where it could slip.

FUNCTIONAL APHONIA

To the Editor:—A healthy white woman, aged 30, has had about six attacks of aphonia during the past two years, some of which have lasted as long as two months and some for a minimum of two weeks. I can find no foci of infection; the blood and urine are normal, the Wassermann reaction is negative, and a throat specialist can find nothing abnormal with the laryngoscope. The past two attacks, both of which lasted about two weeks, began with the onset of her menstrual periods. She cannot remember about the others. I would appreciate some information with regard to the apparent idiopathic aphonia and any suggestion as to treatment.

M.D., Kentucky.

ANSWER.—In the absence of any objective evidence of organic disease, the patient should be considered to have a functional or hysterical aphonia. This is one of the most common forms of hysterical paralysis, the voice being most intimately connected with the emotional life. This type of aphonia almost always comes on suddenly as the result of some mental excitement or of menstruation. Coughing and hawking are usually accompanied by vocal sounds, and expressions of pain may also be.

The aphonia tends to disappear suddenly and spontaneously. Some other emotional stimulus or mental excitement may result in a cure. Faradism or galvanism to the neck muscles two to three times a week may prove beneficial. The patient must be told that her voice will ultimately return and that future attacks may be prevented by proper analysis of the motivating factor (such as menses and emotional or mental excitement).

DETERMINATION OF CINCHOPHEN IN TISSUES

To the Editor:—Is there any method of determining the amount of cinchophen in the blood? B. M. OVERHOLT, M.D., Battle Creek, Mich.

ANSWER.—No method for the quantitative determination of cinchophen in the blood has been found in any of the literature covering the past twenty years. Quantitative determinations of cinchophen in other tissues, however, are available (Angelo Castiglioni, *Ann. chim. applicata* 25:240, 1935). Qualitative color tests for determination of cinchophen have been described by Ekkert (*Pharm. Zentralbl.* 68:797, 1927) and by S. Palkin (*J. Am. Pharm. A.* 16:632, 1927).

SOLUTION OF MORPHINE AND ATROPINE

To the Editor:—Would an aqueous solution of morphine with atropine be stable? If so, should distilled water be used or physiologic solution of sodium chloride? (My plan was to dissolve the usual tablets in sterile water so that there would be one-fourth grain [0.016 Gm.] of morphine sulfate and $\frac{1}{2}$ 50 grain [0.0004 Gm.] of atropine sulfate in 0.5 cc. of water and have this solution in a rubber stoppered ampule. Then any fractional doses could be withdrawn as needed without waiting for the usual procedure.) Should this solution contain any antiseptic to keep it sterile?

M.D., Texas.

ANSWER.—An aqueous solution of morphine with atropine is fairly stable, although the addition of a trace of hydrochloric acid increases its stability. One may use distilled water, although the use of physiologic solution of sodium chloride is rational, as it makes the preparation more nearly isotonic. It is well to add an antiseptic, such as 0.5 per cent phenol, to all multiple dose ampules to make certain of continued sterility. The solution should be prepared aseptically and discarded if it loses its clearness.

SMALLPOX VACCINATIONS FOR ACNE

To the Editor:—I have recently had a request for the treatment of acne by giving six smallpox vaccinations, a week apart. Is there any information regarding this?

M.D., Iowa.

ANSWER.—Herpes simplex has been treated by vaccination with cowpox virus, but no mention has been found in the literature of the treatment of acne vulgaris by this method.

INJECTIONS OF WHOLE BLOOD IN PSORIASIS

To the Editor:—Please give me any information available concerning the use of whole blood in the treatment of psoriasis. Some current articles are reporting good results from taking the blood of an affected individual and injecting it immediately intramuscularly.

BLISS L. FINLAYSON, M.D., Price, Utah.

ANSWER.—There have been several articles in recent years reporting improvement in psoriasis from intramuscular injection of whole blood. Jones and Alden (*South. M. J.* 30:735 [July] 1937) have contributed a valuable article discussing its use in other diseases as well. From 5 to 10 cc. of blood is withdrawn from a vein in the arm and reinjected into the gluteal muscles. Usually from eight to ten injections are given. There is little discomfort from its use. The method is certainly worth a trial in obstinate cases of psoriasis.

NOCTURNAL BREATH HOLDING

To the Editor:—I am awakened a number of times during the night to find that I am holding my breath. The fact that I am not breathing seems to be what awakens me. It is annoying and I am beginning to wonder if there is some disease process behind it or merely a nervous manifestation. I am 48 years old, weigh 175 pounds (79 Kg.) and appear to be in good physical health, although I have some lumbo-sacral trouble for a year and a half and am just recovering from a four weeks attack of urticaria, which may have been due to eating jumbo shrimp or to a cold vaccine I took about the same time.

M.D., California.

ANSWER.—The inquiry does not contain sufficient information for more than a general answer. While the symptom complained of, "holding one's breath," may be the most important presenting symptom to the patient, closer inquiry may well reveal other complaints that might help in suggesting a diagnosis. It might be well to consider the possibility of an extra-systole awakening the patient and giving him the sensation that he describes. Under such circumstances the patient should be

aware of similar extrasystoles occurring during the day. There is nothing that suggests an allergic origin for the complaint, in spite of the presence of urticaria of four weeks' duration. It would be advisable to have a complete examination, with particular reference to the condition of the heart.

NOCTURNAL DYSPNEA

To the Editor:—In a recent inquiry in *Queries and Minor Notes*, Philip Siegel requested information on nocturnal dyspnea. I have had remarkable results in several refractory cases, in which attacks came on at a regular time, by having the patient set his alarm clock an hour previous to the time of the expected attacks and having him at that time take a cup of coffee. It seems to me that this method would be worth trying in preference to morphine with its habit forming tendencies.

H. F. BECKER, M.D., Los Angeles.

TREATMENT OF DOG BITE

To the Editor:—I noticed in *THE JOURNAL*, June 4, page 1945, the note on "Treatment of Dog Bite." I believe that all dog bites should be treated with fuming nitric acid, because the acid is effective for rabies virus. Even a mean sear is preferable to running one chance in a million of getting rabies. May I refer you to "Preventive Medicine and Hygiene," by Milton J. Rosenau, sixth edition, page 353, under "Local Treatment of the Wound."

MORRIS COHEN, M.D., Lawrence, L. I., N. Y.

Council on Medical Education and Hospitals

ADDITIONAL HOSPITALS APPROVED

The Council on Medical Education and Hospitals of the American Medical Association has given its approval to the following hospitals since the publication of the last previous list in *THE JOURNAL*, March 19, 1938:

Hospitals Approved for Intern Training

Presbyterian Hospital-Olmstead Memorial, Los Angeles.
Queen of Angels Hospital, Los Angeles.
South Shore Hospital, Chicago.
St. Elizabeth Hospital, Elizabeth, N. J.
Jewish Memorial Hospital, New York City.
Manhattan General Hospital, New York City.
Methodist Hospital, Fort Worth, Texas.

Hospitals Approved for Residencies in Specialties

City of Chicago Municipal Tuberculosis Sanitarium, Chicago.
Thoracic Surgery.
Presbyterian Hospital, Chicago.
Radiology.
Indianapolis City Hospital, Indianapolis.
Medicine, Obstetrics-Gynecology and Pediatrics.
U. S. Public Health Service Hospital, Lexington, Ky.
Psychiatry.
St. Joseph Infirmary, Louisville, Ky.
Surgery.
Baltimore City Hospitals, Baltimore.
Obstetrics and Pediatrics.
Maryland General Hospital, Baltimore.
Obstetrics-Gynecology.
Massachusetts Memorial Hospitals, Boston.
Anesthesia and Pathology.
Danvers State Hospital, Haverhill, Mass.
Psychiatry.
Worcester State Hospital, Worcester, Mass.
Pathology.
Herman Kiefer Hospital, Detroit.
Tuberculosis.
Hurley Hospital, Flint, Mich.
Pathology.
Creighton Memorial St. Joseph's Hospital, Omaha.
Radiology.
Mountainside Hospital, Montclair, N. J.
Surgery.
Deaconess Hospital, Buffalo.
Surgery.
Harlem Eye and Ear Hospital, New York City.
Ophthalmology-Otolaryngology.
Huron Road Hospital, East Cleveland, Ohio.
Anesthesia.
Sister Hospital, Tulsa, Okla.
Orthopedics.
Jefferson Medical College Hospital, Philadelphia.
Obstetrics.
Temple University Hospital, Philadelphia.
Medicine and Psychiatry.
Montefiore Hospital, Pittsburgh.
Pathology.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 20-22. Sec., Dr. J. N. Baker, 517 Dexter Ave., Montgomery.
ALASKA: Juneau, Sept. 6. Sec., Dr. W. W. Council, Box 561, Juneau.
ARIZONA: Basic Science. Tucson, Sept. 20. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.
ARKANSAS: Medical. Little Rock, Nov. 3-4. Sec., State Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana.
BASIC SCIENCE. Little Rock, Nov. 7. Sec., Mr. Louis E. Gebauer, 701 Main Street, Little Rock.
CALIFORNIA: Reciprocity. San Francisco, Sept. 14, and Los Angeles, Nov. 16. Written examinations. Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.
CONNECTICUT: Endorsement. Hartford, July 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.
DISTRICT OF COLUMBIA: Basic Science. Washington, Dec. 26-27. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.
FLORIDA: Jacksonville, Nov. 14-15. Sec., Dr. William M. Rowlett, Box 786, Tampa.
GEORGIA: Atlanta, Oct. 11-12. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.
IDAHO: Boise, Oct. 4-5. Commissioner of Law Enforcement, Hon. J. L. Balderston, 205 State House, Boise.
ILLINOIS: Chicago, Oct. 18-20. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.
MARYLAND: Baltimore, Dec. 13-16. Sec., Dr. John T. O'Mara, 1715 Cathedral St., Baltimore.
MICHIGAN: Lansing, Oct. 12-14. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.
MINNESOTA: Basic Science. Minneapolis, Oct. 4-5. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.
Medical. Minneapolis, Oct. 18-20. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.
MISSISSIPPI: Reciprocity. Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.
MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.
NEBRASKA: Basic Science. Lincoln, Oct. 4-5. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.
NEVADA: Reciprocity. Carson City, Aug. 1. Sec., Dr. John E. Worden, Capitol Bldg., Carson City.
NEW HAMPSHIRE: Concord, Sept. 15-16. Sec., Board of Registration in Medicine, Dr. Fred E. Clow, State House, Concord.
NEW JERSEY: Trenton, Oct. 18-19. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.
NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. Le Grand Ward, 115 Palace Ave., Santa Fe.
NEW YORK: Albany, Buffalo, New York, and Syracuse, Sept. 19-22. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.
NORTH CAROLINA: Reciprocity. December. Sec., Dr. William D. James, The Hamlet Hospital, Hamlet.
OKLAHOMA: Basic Science. Oklahoma City, Dec. 7. Sec., State Medical. Hon. Frank C. Carter, State Capitol Bldg., Oklahoma City, Frederick.
Oklahoma City, Dec. 14. Sec., Dr. James D. Osborn Jr., State Board of Oregon: Basic Science. Portland, Nov. 19. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.
PUERTO RICO: Santurce, Sept. 6-10. Sec., Dr. O. Costa Mandy, Box 3854, Santurce.
SOUTH CAROLINA: Columbia, Nov. 8. Sec., Dr. A. Earle Booser, 505 Saluda Ave., Columbia.
VERMONT: Burlington, Feb. 14. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.
VIRGINIA: Richmond, Dec. 14-16. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.
WISCONSIN: Basic Science. Madison, Sept. 24. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.
Medical. Madison, Jan. 10-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.
WYOMING: Cheyenne, Oct. 3 (probable date). Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in *THE JOURNAL*, July 16, page 275.

New York January Examination

Mr. Herbert J. Hamilton, chief, Professional Examinations Bureau, reports the written examination held by the New York State Board of Medical Examiners in Albany, Buffalo, New York and Syracuse, Jan. 24-27, 1938. Three hundred and sixty-three candidates were examined, 253 of whom passed and 110 failed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Stanford University School of Medicine.....	(1934)		1
University of Colorado School of Medicine.....	(1937)		1
George Washington University School of Medicine.....	(1935)		3
(1936, 2)	(1937)		1
Georgetown University School of Medicine.....	(1935)		4
Northwestern University Medical School.....	(1935), (1937, 3)		1
Rush Medical College.....	(1937, 2)		2
School of Medicine of the Division of Biological Sciences.....			

University of Illinois College of Medicine.....(1938)	1	Cornell University Medical College.....(1930)	1
University of Louisville School of Medicine.....(1937)	1	New York Homeopathic Medical College and Flower Hospital.....(1935)	1
Boston University School of Medicine.....(1936), (1937)	2	New York University, University and Bellevue Hospital Medical College.....(1934)	1
Harvard University Medical School (1929), (1933), (1935), (1936)	4	University of Rochester School of Medicine.....(1934)	1
Tufts College Medical School.....(1934), (1936)	2	Hahnemann Medical College and Hospital of Philadelphia (1937)	1
University of Michigan Medical School (1935), (1936), (1937)	3	University of Pennsylvania School of Medicine.....(1937)	2
St. Louis University School of Medicine.....(1936), (1937, 2)	3	Marquette University School of Medicine.....(1937)	1
Washington University School of Medicine.....(1935)	1	Queen's University Faculty of.....	1
University of Nebraska College of Medicine.....(1934), (1935)	2	University of Toronto Faculty of.....	2
Albany Medical College.....(1937, 2)	2	University of Western Ontario.....	2
Columbia University College of Physicians and Surgeons.....(1937, 3)	3	McGill University Faculty of Medicine.....(1936)	1
Cornell University Medical College.....(1934), (1937)	2	Medizinische Fakultät der Universität Wien.....(1922), (1937, 3)	4
Long Island College of Medicine.....(1936, 3), (1937, 3)	6	Universita Karlova Fakulta Lékařská, Praha.....(1929), (1935)	2
New York Medical College and Flower Hospital (1935), (1937, 3)	4	Université de Paris Faculté de Médecine.....(1935), (1936)	2
New York University College of Medicine (1935, 2), (1936, 4), (1937, 4)	10	Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg.....(1924)	1
Syracuse University College of Medicine.....(1937)	1	Albertus-Universität Medizinische Fakultät, Königsberg.....(1922), (1937)	2
University of Buffalo School of Medicine.....(1936), (1937, 2)	3	Eberhard-Karls-Universität Medizinische Fakultät, Tübingen.....(1922)	1
University of Rochester School of Medicine.....(1937, 2)	2	Friedrich-Alexanders-Universität Medizinische Fakultät, Erlangen.....(1914), (1934)	2
University of Oklahoma School of Medicine.....(1937)	1	Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin.....(1916), (1922), (1923), (1924), (1931, 2), (1937)	8
Hahnemann Medical College and Hospital of Philadelphia.....(1935), (1937)	2	Hamburgische Universität Medizinische Fakultät.....(1936)	1
Jefferson Medical College of Philadelphia.....(1937, 4)	4	Hessische Ludwigs-Universität Medizinische Fakultät, Giessen.....(1909)	1
University of Pennsylvania School of Medicine (1935), (1936, 2)	3	Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main.....(1920), (1921), (1936)	3
Temple University School of Medicine.....(1936, 2), (1937, 2)	4	Julius-Maximilians-Universität Medizinische Fakultät, Würzburg.....(1919), (1920), (1928), (1936)	4
Medical College of the State of South Carolina.....(1936)	1	Ludwigs-Maximilians-Universität Medizinische Fakultät, München.....(1920, 3), (1936)	4
University of Vermont College of Medicine.....(1933), (1936)	2	Philippus-Universität Medizinische Fakultät, Marburg.....(1923)	1
Dalhousie University Faculty of Medicine.....(1934), (1937)	2	Rheinische Friedrich-Wilhelms-Universität Medizinische Fakultät, Bonn.....(1936)	1
Queen's University Faculty of Medicine.....(1935), (1936)	2	Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau.....(1934)	1
University of Toronto Faculty of Medicine.....(1934), (1936)	2	Universität Heidelberg Medizinische Fakultät (1903), (1921), (1923), (1931)	4
McGill University Faculty of Medicine (1932), (1935, 2), (1936), (1937)	5	Universität Köln Medizinische Fakultät.....(1933)	1
Leopold-Franzens-Universität Medizinische Fakultät, Innsbruck.....(1936, 2)	2	Universität Leipzig Medizinische Fakultät (1903), (1911), (1936), (1937)	4
Medizinische Fakultät der Universität Wien (1931), (1934, 2), (1935, 2), (1936, 5), (1937, 13)	23	Universität Rostock Medizinische Fakultät.....(1935)	1
Universidad de la Habana Facultad de Medicina y Farmacia.....(1927)	1	Magyar Királyi Ferencz József Tudományegyetem Orvostudományi Kara, Szeged.....(1933), (1937)	2
Licentiate of the Royal College of Physicians of London, and Member of the Royal College of Surgeons of England.....(1935), (1936), (1937)	3	Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest.....(1936)	1
University of Sheffield Faculty of Medicine.....(1937, 3)	3	University of Dublin School of Physic, Trinity College.....(1937)	1
Université de Montpellier Faculté de Médecine.....(1937)	1	Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia.....(1937)	1
Université de Paris Faculté de Médecine (1935), (1936, 2), (1937, 3)	6	Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia.....(1934, 2), (1936, 2)	4
Université de Strasbourg Faculté de Médecine.....(1911)	1	Regia Università degli Studi di Siena. Facoltà di Medicina e Chirurgia.....(1936), (1937)	2
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg.....(1907), (1922), (1925), (1928), (1931), (1937)	6	Regia Università di Napoli Facoltà di Medicina e Chirurgia.....(1932)	1
Albertus-Universität Medizinische Fakultät, Königsberg.....(1919)	1	Regia Università di Pisa Facoltà di Medicina e Chirurgia.....(1934), (1937)	2
Friedrich-Alexanders-Universität Medizinische Fakultät, Erlangen.....(1916)	1	Escuela Libre de Homeopatía del Estado de Puebla, Mexico.....(1920)	1
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin.....(1919), (1920), (1922, 2), (1923), (1926), (1929), (1933), (1934), (1935), (1936), (1937, 2)	13	Unwersytet Jozefa Pilsudskiego, Warszawa.....(1930)	1
Hamburgische Universität Medizinische Fakultät (1936), (1937)	2	University of Edinburgh Faculty of Medicine.....(1931)	1
Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main.....(1931), (1936)	2	Licentiate of the Royal College of Physicians, of the Royal College of Surgeons, Edinburgh, and of the Royal Faculty of Physicians and Surgeons, Glasgow.....(1937)	1
Julius-Maximilians Universität Medizinische Fakultät Würzburg.....(1910)	1	Universität Basel Medizinische Fakultät.....(1934), (1935), (1937)	3
Ludwig-Maximilians-Universität Medizinische Fakultät, München.....(1912), (1922, 2), (1923), (1924), (1936, 2)	7	Universität Bern Medizinische Fakultät (1934), (1935), (1937, 3)	5
Rheinische Friedrich-Wilhelms-Universität Medizinische Fakultät, Bonn.....(1919), (1935)	2	Universität Zürich Medizinische Fakultät.....(1935), (1937, 6)	7
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau.....(1932)	1	Université de Genève Faculté de Médecine.....(1933), (1937)	2
Universität Heidelberg Medizinische Fakultät (1913), (1918), (1923)	3	Université de Lausanne Faculté de Médecine.....(1936), (1937, 2)	3
Universität Köln Medizinische Fakultät.....(1933)	1		
Magyar Királyi Erzsébet Tudományegyetem Orvostudományi Pecs.....(1928)	1	Eighty physicians were licensed by endorsement from March 1 through May 3. The following schools were represented:	
University of Dublin School of Physic, Trinity College.....(1937)	1		
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia.....(1936, 2), (1937, 3)	5	School	LICENSED BY ENDORSEMENT
Regia Università degli Studi di Firenze. Facoltà di Medicina e Chirurgia.....(1936)	2		Year Endorsement of
Regia Università degli Studi di Padova. Facoltà di Medicina e Chirurgia.....(1935)	1	University of Colorado School of Medicine.....(1937)	Maryland
Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia.....(1934), (1935, 6), (1936, 3)	10	Georgetown University School of Medicine.....(1935)	New Jersey
Regia Università di Napoli Facoltà di Medicina e Chirurgia.....(1934), (1935)	2	Howard University College of.....	Virginia
Regia Università di Pisa. Facoltà di Medicina e Chirurgia.....(1937)	1	Emory University School of.....	N. Carolina
American University of Beirut School of Medicine.....(1936)	1	Rush Medical College (1927),	California
Licentiate of the Royal College of Physicians, of the Royal College of Surgeons, Edinburgh, and of the Royal Faculty of Physicians and Surgeons, Glasgow (1936), (1937, 15)	16	Baltimore Medical College.....(1905)	Penna.
University of Glasgow Medical Faculty (1935), (1936), (1937)	3	University of Physicians and Surgeons of Baltimore.....(1911)	Penna.
Universität Basel Medizinische Fakultät (1935, 2), (1936, 4), (1937, 7)	13	Johns Hopkins Univ. School of Med. (1930), (1931), (1935)	Maryland
Universität Bern Medizinische Fakultät (1935), (1936, 2), (1937, 4)	7	University of Maryland School of Medicine and College of Physicians and Surgeons.....(1935), (1936)	Maryland
Universität Zürich Medizinische Fakultät (1934), (1935), (1936, 2), (1937, 3)	7	Boston University School of Medicine.....(1926), (1936)	N. B. M. Ex.
Université de Genève Faculté de Médecine (1935, 2), (1936, 2)	4	Harvard University Medical School.....(1924)	N. B. M. Ex.
Université de Lausanne Faculté de Médecine (1936), (1937, 5)	6	Tufts College Medical School.....(1931)	Puerto Rico, (1935, 2)
		Detroit College of Medicine and Surgery.....(1932)	Michigan
		University of Minnesota Medical School.....(1935)	Minnesota
		St. Louis University School of Medicine.....(1935)	N. B. M. Ex.
		Columbia University College of Physicians and Surgeons.....(1932)	N. B. M. Ex.
		Cornell University Medical College.....(1933)	New Jersey
		New York Homeopathic Medical College and Hospital.....(1906)	N. B. M. Ex.
		New York Medical College and Flower Hospital.....(1936, 8)	Penna.
		New York University, Univ. and Bellevue Hospital Medical College.....(1933)	N. B. M. Ex.
		Syracuse University College of Medicine.....(1935)	N. B. M. Ex.
		Duke University School of Medicine.....(1934)	N. B. M. Ex.
		Eclectic Medical College.....	Ohio
		University of Cincinnati.....	Ohio
		Western Reserve University.....	Ohio
		Hahnemann Med. College and Hosp. of Philadelphia (1937, 2)	Maryland
		Jefferson Medical College of Philadelphia.....(1927)	Puerto Rico
		Temple University School of Medicine.....(1933)	Delaware
School	FAILED	Year Grad.	Number Failed
Georgetown University School of Medicine (1934), (1936), (1937)	3		
Howard University College of Medicine.....(1935)	1		
University of Georgia School of Medicine.....(1935)	1		
Chicago Medical School.....(1931)	1		
Boston University School of Medicine.....(1934)	1		
Tufts College Medical School.....(1937)	1		
University of Nebraska College of Medicine.....(1933)	1		
Columbia University College of Physicians and Surgeons.....(1905)	1		

University of Pennsylvania School of Medicine.....(1910)	Penna.,
(1935) New Jersey	
Woman's Medical College of Pennsylvania.....(1935)	N. B. M. Ex.
Medical College of the State of South Carolina.....(1911)	S. Carolina
Meharry Medical College.....(1934)	N. B. M. Ex.
Vanderbilt University School of Medicine.....(1934)	Tennessee
Baylor University College of Medicine.....(1936)	Texas
Medical College of Virginia.....(1932), (1937)	Virginia
University of Virginia Department of Medicine.....(1931)	Virginia
University of Wisconsin Medical School.....(1935)	Wisconsin
McGill University Faculty of Medicine.....(1935)	Maryland
Medizinische Fakultät der Universität Wien.....(1921)	Austria,
(1936) N. B. M. Ex.	
Université de Paris Faculté de Médecine.....(1935)	Puerto Rico
Friedrich-Wilhelms-Universität Medizinische Fakultät.	
Berlin.....(1929)	Germany, Texas
.....t Medizinische Fakultät.....(1922)	Germany
.....niversität Medizinische Fak.....(1919)	Germany
Regia Università degli Studi di Bologna. Facoltà di	
Medicina e Chirurgia.....(1935)	Maryland
Regia Università degli Studi di Roma. Facoltà di	
Medicina e Chirurgia.....(1934) New Jersey, (1935), (1936)	Maryland
Regia Università di Napoli Facoltà di Medicina e	
Chirurgia.....(1923) Texas, (1935) New Jersey, (1936)	Maryland
Licentiate of the Royal College of Physicians, of the	
Royal College of Surgeons, Edinburgh, and of the	
Royal Faculty of Physicians and Surgeons, Glasgow.....(1937)	Texas
Université de Lausanne Faculté de Médecine.....(1936)	Maryland

Book Notices

Child Guidance Procedures: Methods and Techniques Employed at the Institute for Juvenile Research. By the Staff of the Institute for Juvenile Research. Paul L. Schroeder, M.D., Director, Institute for Juvenile Research, Chicago, Illinois. The Century Psychology Series, Richard M. Elliott, Editor. Cloth. Price, \$2.50. Pp. 362. New York & London: D. Appleton-Century Company, Incorporated, 1937.

With the disappearance of the New York Child Guidance Institute from the orthopsychiatric scene the Institute for Juvenile Research has become a leader in the field of psychiatric child guidance. It was the earliest and at present is the largest institution of its kind in this country, and in spite of the various ups and downs in its personnel and management it can point to a fairly successful history. Many of its graduates are holding leading psychiatric positions with much success, and while the institute itself has possibly been deteriorating somewhat recently the economic and political conditions which have caused this have been operating elsewhere to some extent also. The present volume is a summary of the methods used at the institute in the studying and treating of cases. Many of the collaborators are no longer there, and some of the most prominent persons on the institute staff left before this work was written. Nevertheless their imprints can be read into the descriptions of the technics contained in the present volume. Roughly, the book is divided into five parts: first, the problem of child guidance; second, a series of seven essays on the various diagnostic procedures used; third, therapy with illustrative cases; fourth, a description of the relationship of the clinic to the community; fifth, a summary entitled "Perspective."

When one considers the tremendous mass of material available at the institute, one is somewhat disappointed in this book. It is true that there is a brief discussion of diagnosis by means of physical examination, psychiatric examination, psychologic test, social history and recreation study, but these are really too sketchily given to enable some person in some other clinic to use the institute's methods. Most of the considerations in the chapter on physical examination, for instance, are better covered in a book published over ten years ago, Healy's "Individual Delinquent." In the psychologic test discussion only a page or two is devoted to the extraordinarily fine work done by Marion Monroe while she was with the institute, which has been of great therapeutic value throughout the whole country. The recreational interview, which receives much attention, probably belongs to the psychiatric study although it has been separated for years as a separate technic and has perhaps been overstressed. Those acquainted with the institute will find in the description of the recreational study the reason for the comment which has often been brought up; namely, that the recreational interview is not a study of recreation but is an attempt to divorce some of the psychiatric questioning from the psychiatrist.

The most valuable part of this book is the summary of the various treatment procedures available to psychiatrists doing

children's work. The illustrative cases do not illustrate these very well but they do give the person unacquainted with the institute procedures some idea of how good therapy can be done under somewhat adverse conditions, these conditions being shortness of time and conflict with the community which is not yet entirely educated to modern child guidance procedures. It must be admitted, of course, that only a sampling could be given, and the sampling presented here should serve as a stimulation to the child guidance expert to go further and formulate for himself treatment procedures along the lines which are being used at the institute. One feature emphasized in this volume which one cannot ignore is the fact that treatment procedures cannot be developed by reading or by synthesizing a few random cases from the psychiatrist's experience. The treatment procedures and methods used here are convincing evidence that a joint effort made between the various disciplines allied to medicine with psychiatry and with pediatrics must be used, and like the child himself the child guidance expert must learn to creep and toddle under supervision before he can walk or run in this field. He cannot pick the material up himself; he must be taught. One must deny the fact that much valuable work has been done by the Behavior Research Fund which could contribute to the institute but which has now been more or less divorced from it.

There are certain procedures available from these studies which might have been synthesized into this report of the institute's procedures. To summarize, one can state that this is an excellent book to describe modern child guidance procedures. It is beautifully edited and well written but not entirely comprehensive. It will serve rather as a stimulus to the beginning child guidance expert rather than as a comprehensive textbook which will tell him how he can function without guidance, and it will serve to give both the public and those individuals who are not trained in a child guidance clinic an idea of the ideology and methods which are currently in use in what is probably the leading organization of its kind in this country, and perhaps in the world.

The Brain and Its Environment. By Joseph Barcroft, Professor of Physiology, Cambridge University. Cloth. Price, \$2. Pp. 117, with 30 illustrations. New Haven: Yale University Press; London: Oxford University Press, 1938.

By stating that Dr. Yandell Henderson is responsible for the title of his book, the author escapes the criticism that the title is more comprehensive than the subject matter. However, the small size of the volume will warn would-be purchasers that they are not to expect a comprehensive and detailed discussion of the brain and its environment. The publication comprises the Terry lectures given at Yale. Two of three lectures deal with observations of the living fetus of the goat. There are disputed points of anatomy to be settled. Then the author brings out the interesting fact that, during the latter part of pregnancy, blood flow to the fetus does not increase along with the increase in weight and that the oxygen saturation of the blood going to the brain progressively falls, so that at term the arterial blood is only half saturated, the equivalent of living at an altitude which approaches the stratosphere. The second chapter deals with adjustments in blood flow, in blood pressure, in respiration and in the oxygen dissociation curves, during moments of transition from life within the uterus to the life in the air, a transition which is "the most exciting five minutes in physiology." The ductus arteriosus is a remarkable example of anticipation of physiologic needs. The neuromuscular mechanism of the ductus has been organized in the fetus but never used till birth, when, having performed its function, it degenerates. The third chapter, on mental efficiency in relation to some properties of the blood, comes to man. The author mentions briefly some of the various evidences of mental inefficiency which arise when there is either excess or deficit in the temperature or oxygen concentration of the body or in the concentration of oxygen, dextrose, water, sodium or calcium of the blood. For these symptoms the author draws on his long experience in auto-experimentation. These lectures are informal and informative, and whether heard or read they bring satisfaction to the many who admire Sir Joseph and his long, enthusiastic and successful search for physiologic truths.

The Man Takes a Wife: A Study of Man's Problems In and Through Marriage. By Ira S. Wile, M.S., M.D. Cloth. Price, \$2.50. Pp. 277. New York: Greenberg, Publisher, Inc., 1937.

This is a most interesting little book, for it is a study of the husband's relationship to the various members of his family and to the community from the standpoint of successful marriage. The author is a man who has done a great deal of psychiatric and child guidance work over a number of years, has come in contact with husbands and wives, and thus has had an opportunity fully to understand the problems of marriage adjustment. As a matter of fact, he has written a previous volume on the subject. The present work is simply and easily styled but is by no means a light volume which can be read for an evening's entertainment. It requires some knowledge of sociology and some understanding of domestic relations problems. In other words, it is not a book that can be handed to the prospective husband who before marriage has no idea of the problems involved in marriage unless some discussion of the book and of the problems of marriage accompanies it. Wile outlines thoroughly the requirements of a successful marital relation and why it is necessary for the husband to enter into marriage as well as the results of a favorable marital adjustment. He devotes chapters to the various problems that will cause conflict in the home and these chapters are arranged in somewhat of a chronologic order. The book begins with a discussion of the consideration that should be given by the man to the problems confronting him in a forthcoming marriage. Following this there is a consideration of the adjustments to be made in the first period of the marriage, and then the marital relationship is presented consistently through the period of fatherhood, later parenthood, including those problems which confront the father in dealing with adolescents, and also factors which are important in middle and old age. All in all, this is a whole-some work. It is well written, thoroughly thought out, properly systematized, and except for the requirement of some education and background which is necessary for the reader, it is one that can be used profitably, no doubt, in aiding the male of the human species in making his marital adjustment.

Season of Birth: Its Relation to Human Abilities. By Ellsworth Huntington. Cloth. Price, \$3.50. Pp. 473, with 104 illustrations. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Limited, 1938.

This remarkable book is one of fundamental importance in human biology and should be read by every physician and worker in fields concerned with racial reproduction. It deals primarily with environmental and time factors of birth that affect vitality, chances for survival, and likelihood of success in later life. The book is in no sense one to be considered for light reading; it is most interesting and entertaining, however, when read with close attention. Since physicians usually have a close advisory contact with racial reproduction, the book should hold for them a special interest. Season of birth, parental age, health and vitality, and the order of birth are all here shown to exercise important effects on the infant's later existence. Present development and use of satisfactory birth control technic makes possible an intelligent timing of births and thus renders Huntington's results of practical importance. In the book it is shown, for instance, that season of birth definitely and significantly influences (a) length of life, (b) chances of a successful life as measured by practically all criteria of success, (c) chances of survival through the dangers of infancy and childhood, and several other existence factors of later life. There exists an undoubted seasonal vitality tide for man which directly influences parental vitality as well as that of the offspring. This tide varies in its timing in different climatic regions and seems to depend more on the effective temperature level than on any other single factor. In middle temperate regions those individuals conceived at the time of the late spring peak in general vitality exhibit an average life span almost four years longer than do those conceived at the end of the summer's heat. A preponderance of great and illustrious personages over the world were conceived at this season which offers a longer life span. These and many other facts on the effect of season of birth are brought out by Huntington with a critical attention to the possible ambiguities and pitfalls of birth statistics. One feels inclined,

after reading the book, to accept his conclusions as proved. The volume is packed full of meaty material, with full supporting facts and data, and Huntington is no novice at this sort of study.

Morphologie und Histophysiologie der normalen Schilddrüse. Von Doz. Dr. B. Eggert. Band III, Zwanglose Abhandlungen aus dem Gebiet der inneren Sekretion. Herausgegeben von Professor Dr. W. Berblinger. Paper. Price, 13.50 marks. Pp. 113, with 33 illustrations. Leipzig: Johann Ambrosius Barth, 1938.

This little volume, concerned chiefly with the embryology and physiologic variations in the histology of the thyroid, contains a number of excellent drawings, nicely reproduced. The brief text is supported by an unusually extensive bibliography of 327 items, though this is so arranged and printed as to be practically useless for direct reference. Curiously, though the text is replete with citations of the literature, both recent and remote, one finds little or no reference to the classic work of such eminent investigators as Moritz Schiff and David Marine.

How Ancient Healing Governs Modern Therapeutics: The Contribution of Hellenic Science to Modern Medicine and Scientific Progress. By Kleantes A. Ligeros, M.D., Ph.D. Cloth. Price, \$10. Pp. 523, with 87 illustrations. New York & London: G. P. Putnam's Sons, 1937.

This is a dangerous book. It is so beautifully printed, so well illustrated, so thoroughly documented and so plausibly written that the average reader might fail totally to realize its essential purpose. It is only when the latter part of the book is reached that the reader begins to appreciate that the author is developing a plea for chiropractic, spinal mechanism and what he calls rachiotherapy. The real purpose of the volume appears in the appendixes, which are direct eulogies of the founder of chiropractic, D. D. Palmer of Davenport, Iowa. The rest of the volume can be judged from the title and the intent as indicated by the latter part of the book. It is an effort to read back into ancient Greek texts practically all of modern medicine. It is done with such a wealth of reference to standard medical historians and standard writers that the novice in the history of medicine is likely to be completely taken in. The wary reader might begin to get a little suspicious in the middle of the book where the author begins to link Hippocrates' observations in "Epidemics", with such statements as "In diphtheria and mumps, in scarlet fever, migraine, and other conditions, there are marked symptoms having close relation to such minor vertebral subluxations which, upon proper examination, are well palpable and tender to the touch." The historian might begin to get suspicious when, a few pages later, the author says "even Hippocrates and others, long before Harvey and even before Galen, spoke or made reference to the circulation of the blood." References here to such prominent medical historians as Charles Singer, Henry Sigerist and George Sarton serve further to trip the unwary. It is amazing that so excellent a publishing house as G. P. Putnam's Sons should have failed to realize the character of this book. The editorial staff could not have consulted a reputable medical historian.

Operative Gynecology. By Harry Sturgeon Crossen, M.D., Gynecologist to the Barnes Hospital, St. Louis, Missouri, and Robert James Crossen, M.D., Assistant Professor of Clinical Gynecology and Obstetrics, Washington University School of Medicine, St. Louis. Fifth edition. Cloth. Price, \$12.50. Pp. 1,076, with 1,264 illustrations. St. Louis: C. V. Mosby Company, 1935.

The Crossens books have been noted for their excellent illustrations. The present edition of Operative Gynecology contains more than 1,200 well executed drawings and instructive diagrams. In its scope the work includes preoperative and post-operative care, operating room technic, detailed description and depiction of the ordinary and most of the extraordinary gynecologic operations, and a discussion of such intestinal surgery as the gynecologist may need to perform. The almost encyclopedic character of the volume will render it of permanent reference value to gynecologists. General surgeons will find careful discussions of the indications for various operations and if they follow the conservative policies of the authors will spare many a useful ovary and leave many an abdomen unscarred. Parts of the book are superbly written; parts are poorly written and verbose. References to the literature are advantageously placed in the text rather than at the end of chapters. Although most

of the procedures advocated are in accord with current gynecologic opinion, a few are open to sharp criticism. Among these are routine drainage in cases of laparotomy for endometriosis, cesarean or Porro section when ruptured appendicitis complicates late pregnancy, and cruciate incision of the imperforate hymen with hematocolpos. Taken as a whole, the volume can be heartily recommended because it covers the field of operative gynecology, is excellently illustrated and is conservatively written.

Hidrología y climatología médicas. Por Victor Santamarina, secretario general de la Sociedad nacional de hidrología y climatología, et al. Prólogo del Dr. Jose A. Lopez del Valle. República de Cuba, Consejo corporativo de educación, sanidad y beneficencia, Servicio técnico de salubridad. Paper. Pp. 296, with 45 illustrations. Havana: "La propaganda" S. A., 1937.

In this publication, prepared under the auspices of the Cuban Department of Education, Sanitation and Public Welfare by Victor Santamarina, there are brought together a series of educational essays which present an adequate view of the clinical aspects of the subject and which will prove of value to Spanish-speaking physicians. The first part of the volume is given over to a general discussion, with special emphasis on heliotherapy as developed in European centers. This is followed by a short historical retrospect of the development of our knowledge, including the work of Cuban physicians in the field of heliotherapy. Romaguera and Ortiz follow with two excellent reviews of climatology and meteorology in relation to medicine. The problems of tuberculosis and of infant and child welfare are then discussed by Milyares and there follows the review of the climatology of Cuba by Millas, a chapter that should prove of value to physicians who contemplate sending patients to Cuba for the winter. It might be well if this particular part could be made available in English translation. While no original work is presented, the volume is a creditable presentation, designed to interest a wider circle of Spanish-American physicians in physical therapy and climatology.

Athletic Injuries: Prevention, Diagnosis and Treatment. By Augustus Thorndike, Jr., M.D., Surgeon in the Department of Hygiene, Harvard University. Cloth. Price, \$3. Pp. 208, with 164 illustrations. Philadelphia: Lea & Febiger, 1938.

This is a concise, well written treatise which is designed particularly for physicians who are in charge of athletic squads and is excellent for them although probably too technical for the use of coaches or trainers. The first part covers briefly the anatomy and physiology of the human body as related to physical exercise, the results and importance of training in preventing injury, and some specific procedures for such prevention. The second and third parts deal with specific injuries which are incidental to school and college athletics, their diagnosis and treatment, with numerous illustrations and tables of frequency at Harvard University during the years 1932 to 1937. This material is presented clearly and is well illustrated. Possibly there are few types of medical practice in which there are more differences of opinion than in treatment of athletic injuries, each institution being likely to have some pet strapping for a strained knee or other condition. Therefore some of the suggested treatments will be questioned by some readers; but every reader who is dealing with the medical aspects of athletics will find much that is helpful and probably much that is new to him.

Clínica y terapéutica quirúrgicas de urgencia. Por los doctores M. Corachán García y F. Doménech-Alsina. Cloth. Pp. 744, with 248 illustrations. Barcelona, Madrid, Buenos Aires & Rio de Janeiro: Editorial Labor, S. A., 1937.

Into the relatively small compass of this excellent volume is compressed a wealth of material dealing with the many surgical conditions requiring prompt treatment. It is particularly refreshing to find a foreign book with such a wide and discriminating acquaintance with the surgical literature of many other countries. Especially have the authors informed themselves as to the teachings of the leaders in American surgery. The introductory remarks on the organization of an emergency service are valuable and well chosen. The practice of excision and closure of fresh wounds is emphasized; the omission of cleansing irrigations is to be regretted. The section on traumatic shock is excellent. Tannic acid is advised for burns. A commentary

on the obligation of surgical teaching of today is the inclusion of a valuable section on the poison gases used in warfare. All the sections in the book seem to be uniformly good and it is difficult to single out any of particular merit. However, the chapters dealing with head injuries and thoracic injuries have special merit. The paper is excellent, the type clear, and most of the illustrations are well chosen and well executed. Some of the colored plates are very good indeed. The physicians of Spanish-speaking countries should feel fortunate to have such a modern and useful book for reference and for instruction.

Spectroscopy in Science and Industry. Proceedings of the Fifth Summer Conference on Spectroscopy and the Massachusetts Institute of Technology, 1937. A Publication of the Technological Institute of the Massachusetts Institute of Technology. Paper. Price, \$3. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Limited, 1937.

"After many years of skepticism and neglect, applied spectroscopy is coming into its own. Each summer conference brings new proof that spectrum analysis is here to stay and that real problems and improvements in technic will ever widen its usefulness" says W. F. Meggers of the National Bureau of Standards. He might have added that spectrochemical analysis already plays an important part in the clinical laboratories of many hospitals. The pamphlet contains summaries of talks given at the yearly conferences of the Massachusetts Institute of Technology and represents the experience and the announcement of new developments in spectroscopy. It is a reference and laboratory book for all those who are interested in the subject.

Fermente, Hormone, Vitamine und die Beziehungen dieser Wirkstoffe zueinander. Von Robert Ammon, Dr. Med. habil., Dr. Phil., Dozent für Physiol. und pathol. Chemie an der Universität Breslau, und Wilhelm Mierscher, Dr. Med. habil., Dr.-Ing. habil., Dozent für physiol. Chemie an der Universität Frankfurt a. M. Paper. Price, 30 marks. Pp. 151, with 71 illustrations. Leipzig: Georg Thieme, 1938.

The authors of this ambitious work have compiled in a relatively small space information on three vast subjects: enzymes, endocrine principles and vitamins. No bibliography is included, seriously limiting the usefulness of the book. To review in detail so prodigious an accumulation of data is not feasible. Inevitably the authors have omitted much of importance and have included a good deal that might better have been deleted. However, for those whose knowledge of the subjects considered permits them to separate the facts from the less precise material included, this book may be used for reference. Its value as a textbook appears limited.

High Blood Pressure and Longevity, and Other Essays Selected in the Published Writings of David Riesman, M.D., Sc.D., LL.D. (Published in celebration of the seventieth birthday anniversary of Dr. Riesman and made possible through the kind cooperation of his friends.) Cloth. Privately printed. Pp. 726, with portrait. Chicago: Philadelphia & Toronto: John C. Winston Company, 1937.

Dr. Riesman is one of the foremost teachers and practitioners of internal medicine in this country. His pupils are to be found everywhere and all have the most profound respect and admiration for him. He has been a prodigious worker and prolific writer. This collection of essays reveals him as one who diversified his attention not alone in the broad field of internal medicine but also in medical history, archeology, astronomy and other equally interesting subjects. To the physician the medical essays should be particularly interesting, as they cover a period of forty years. Preeminently Dr. Riesman is primarily a thorough clinician. One is reminded of reading the descriptions of diseases by the masters in the premechanized era of medicine. He emphasizes the importance of accurate history taking, the necessary and skilful use of one's fingers and eyes, and a careful correlation of the information gathered by these various measures. In the quest for short cuts in diagnosis and the ever too ready use of laboratory technics one frequently fails to avail oneself of the most important means of diagnosis. The modern student is taught in one place that percussion is valueless, in another that auscultation gives too little information, and therefore that only through the use of the electrocardiogram or the x-ray film should a diagnosis be made. Reading this volume, however, will be of inestimable value to the student and the student. It is interesting to see that the author has not failed to utilize the newer advances in medicine as they appear but still continues to use the time honored methods of

physical examination. The nonmedical articles, as already stated, cover a large field. They are well written in masterly English and are both informative and entertaining. It is manifestly impossible to review these articles as one would a recent textbook or monograph, because they have appeared in various journals over many years. Changing methods are reflected in succeeding essays. Therefore, the critical side is avoided.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospitals for Profit: Liability for Negligence of Special Nurse.—The plaintiff was suffering from a "bad heart and kidney infection" and under the supervision of her attending physician was being cared for by nurses in the employ of the defendant, who owned and operated the hospital in which he was a patient. One night a hospital nurse summoned her physician. He found his patient hysterical and "writhing in pain caused by arterial spasms as a result of thrombosis." He administered morphine and nitroglycerin tablets. Subsequently the patient lost consciousness. The physician directed some of the hospital nurses to apply heat to the limbs. Hot water bottles and heated blankets were applied and later, under the physician's order, electric pads were substituted. The pads immediately were in perfect condition and were switched on at low temperature. The physician then called in a special nurse, selected by him from a list of nurses registered with the hospital for special duty. He remained with his patient until this nurse arrived, and having frequently examined the patient's legs while waiting he was able to testify that his patient's legs were not burned when the special nurse arrived. After giving the special nurse instructions and cautioning her about letting the electric pad get too hot, the physician left the hospital, leaving the special nurse in sole charge of the patient. Several hours later it was discovered that the patient had suffered a third degree burn on the calf of her left leg. In the physician's opinion the electric pad had not been overheated but had been left on the leg too long. The patient's skin tissue, in the opinion of the physician, was so devoid of circulation that even a warm pad would cause such a burn.

The patient sued the owner and operator of the hospital on the theory that the special nurse, whose negligence admittedly caused the burn, was an employee of the defendant for whose negligence he was liable. The trial court, holding that "the special nurse, attended the plaintiff professionally at the special instance and request and in behalf of the defendant," entered judgment in favor of the patient. The defendant then appealed to the district court of appeal, third district, California. The defendant contended that there was no evidence to support the court's finding that the special nurse was acting as his servant or employee at the time the patient was burned and that, on the contrary, it appeared without dispute that the special nurse was exclusively the employee of the patient, subject only to the control and direction of her attending physician.

Assuming, said the district court of appeal, but without so deciding, that a special nurse may be employed by a hospital to care for a patient under circumstances that render the hospital liable for her negligence, that relationship between the hospital and the nurse depends on the contract between them, and the burden of proving the relationship rests on the plaintiff. This the plaintiff in the present case failed to do. The special nurse was employed by her through her representative, her attending physician. He personally waited at the hospital until the special nurse arrived and then turned his patient over to her exclusive charge. There was no evidence that any general nurse or employee of the hospital ever saw the plaintiff or attempted to direct or advise her special nurse with respect to her care after she took charge of the patient. When the services of the special nurse were dispensed with, she was paid directly by the plaintiff and not by the defendant. Clearly, said the court, the special nurse was in

the employ of the plaintiff herself, subject to the exclusive control and direction of her attending physician.

Ordinarily, continued the court, in the absence of an agreement to the contrary, a general hospital is not liable for injury to a patient resulting from mistakes which occur in the manner of the professional treatment of a patient by a nurse or a physician, because their professional treatment is not subject to control or direction by the administrative officers or employees of the hospital. A hospital may be liable if its administrative officers are negligent in employing an incapable nurse through whose carelessness or lack of ability in the course of her duties the patient is injured. A hospital may also be liable for the negligence of a nurse in carrying out the administrative duties of the hospital. But here the plaintiff was injured by the negligence of the special nurse in the careless performance of her professional duties and not in carrying out any of the administrative duties of the hospital.

The district court of appeal held that the trial court's finding that the plaintiff was injured through the negligence of an "employee of the hospital" was unwarranted by the evidence and accordingly reversed the judgment in favor of the patient and directed the trial court to enter judgment in favor of the defendant owner of the hospital.—*Ware v. Culb (Calif.)*, 74 P. (2d) 283.

Workmen's Compensation Acts: Compensability of Death from Coronary Occlusion.—On August 31 the claimant's husband, in the course of his employment with the Pittsburgh Coal Company, sustained an accidental injury to several toes of his left foot, necessitating their amputation, September 18. On November 6 he died from a coronary occlusion. The claimant thereupon brought proceedings under the workmen's compensation act of Pennsylvania against the defendant coal company. The workmen's compensation board found that the death of the claimant's husband from coronary occlusion had not been caused by nor was it related to the accidental injury to his toes or to their resultant amputation. From a judgment affirming the order of the board denying compensation, the claimant appealed to the superior court of Pennsylvania.

There was ample competent evidence, said the superior court of Pennsylvania, to sustain a finding that the coronary occlusion which caused the workman's death had resulted from a degenerative heart disease, arteriosclerosis of the coronary arteries, and was in no way caused by or related to the accidental injury to his toes. The autopsy record and the testimony of the attending physician showed that healing without infection or inflammation had taken place following the amputation of the toes. An impartial medical expert appointed by the board, a cardiac specialist, testified:

There is only one way in which an embolus from the foot could cause coronary occlusion, and that is by the embolus passing through a patent foramen ovale, which is a congenital heart condition. This patient, according to the autopsy record, (which was offered in evidence by the claimant), did not have a patent foramen ovale. Therefore it would be impossible for him to have a coronary occlusion the result of embolism from his foot.

The court pointed out that the physician who performed the autopsy and the attending physician, who was present at the time of the autopsy, both testified to the absence of any congenital heart condition which, if present, might have permitted an embolus from the injured foot to cause the coronary occlusion.

Accordingly, the superior court affirmed the judgment of the lower court upholding the workmen's compensation board's denial of compensation.—*Miller v. Pittsburgh Coal Co. (Pa.)*, 195 A. 151.

Evidence: Use by Physician of Excerpts from Record Book to Refresh Memory.—In two suits for damages for personal injuries, consolidated for trial, a physician who had treated the plaintiffs for the injuries allegedly resulting from the defendant's negligence was permitted, in testifying with respect to his treatment of the plaintiffs, to refresh his recollection by referring to typewritten excerpts from his office day book or record. The Supreme Court of Washington concluded that it was reversible error for the trial court to permit the physician witness to use such excerpts. A record, said the court, which a witness when testifying uses to refresh his recollection must

be the original record, if that is procurable. In this case the physician witness had had the typewritten excerpts from his day book or record made because the day book or record contained statements with respect to the treatments rendered other patients. The fact that this daily report or record contained confidential matter, however, said the court, did not prevent its use, because such matters could have been sealed up or covered over, and such matters would not have been disclosed while the day book or record was under scrutiny in court. If a witness can testify from a typewritten copy when the original is available, it would open the door to manufactured testimony which the opposite party would have no means of meeting or combating.—*Clausen et ux. v. Jones et ux.; Clausen et al. v. Same (Wash.)*, 71 P. (2d) 362.

Malpractice: Allegation of Negligence Does Not Justify Claim Based on Alleged Assault.—The plaintiff sustained a fracture of his right thigh bone at or near the hip joint on December 13. He was taken to a hospital operated by the Nicollet Clinic and there attended by Dr. Jones, one of the defendants in this case. A Whitman plaster-of-paris cast, applied by Dr. Jones, December 18, caused the plaintiff pain and distress, of which he complained frequently. On December 24 that cast was removed and a second one applied. The patient told the physicians when they applied this second cast that he did not want it to cover his foot, because of the severe pain the first cast had caused, but nevertheless the second cast was applied like the first one had been. On January 11, when it was deemed safe and proper to remove that part of the cast covering the foot, it was discovered that the plaintiff had a pressure sore on his heel. This was duly cared for, and on March 24 the rest of the cast was removed. The patient continued to convalesce but about June 15 an infection was discovered in the great toe of the right foot and the toe was lanced. The infection, however, according to the evidence, spread from the toe to the knee and to the hip and arms and did not disappear until a part of the great toe was amputated. The patient was discharged from the hospital as cured some time in October.

The plaintiff sued the Nicollet Clinic, Dr. Jones and others for malpractice. This, he alleged, resulted in the pressure sore on the right heel, which in turn caused the infection that necessitated the amputation of a part of his great toe, loss of function of other toes and of a large part of his right foot, stiffness of the right knee and arthritis. No claim was made that a good result in setting the bones was not achieved. The malpractice, the plaintiff alleged, consisted of setting the cast too tightly and in failing to heed his complaints of pain and thus discovering that the cast was too tight. The trial court directed a verdict for the defendants and denied a motion by the plaintiff for a new trial. He appealed to the Supreme Court of Minnesota.

Some of the injuries suffered by the plaintiff, said the Supreme Court, such as the pressure sore on the heel and the pain and stiffness in the limb after the cast was removed, were caused by the treatment employed. Admittedly the defendants possessed requisite skill and learning as physicians and surgeons. The question in the trial court was whether or not they were negligent in applying their skill and learning. There was no evidence that the practice and procedure pursued by the defendants were not in accord with usual and accepted medical standards, except the testimony of a physician called by the plaintiff that it is usual for physicians to investigate immediately complaints of severe pain in portions of a limb in a cast and that failure to do so may result in injury to the limb. There was no proof, however, that the defendants did not investigate the complaints made by the patient, and the defendants showed affirmatively that they did so, evaluated such complaints and did what they thought should be done under the circumstances. They admitted that the pressure sore on the heel was caused by the cast and that they neither knew nor had any reason to know the plaintiff had or was getting such a sore, prior to the removal of the cast. Before the removal of the cast and in consequence of the patient's complaints, they had made an opening in the cast and found no sore. The toes were permitted to protrude from the cast so that the sufficiency of the blood circulation could be

determined. Frequent examination of the toes negated any interference with circulation which might contribute to cause pressure sores.

The evidence showed without dispute that the use of a Whitman cast is an approved method of treatment in cases like this, that the highest degree of care was exercised in applying the cast and that pressure sores unavoidably developed notwithstanding such care. Stiffness of the knee joint was attributed to the cast, but such stiffness, according to the evidence, was an after-effect of wearing the cast and resulted in this case, as it does in others, in spite of the employment of due care and the best methods of treatment. It was temporary and should disappear with the use of the limb. The pain was a necessary and unavoidable incident of wearing the cast, which the defendants did everything required by proper treatment to allay. The heel sore, pain and stiffness unavoidably resulted in spite of the exercise of due care. A physician or surgeon, continued the court, is required only to possess and exercise the degree of skill and learning ordinarily possessed by members of his school of the profession in good standing and to apply that skill and learning with reasonable care and diligence and his best judgment.

The court was convinced that the injuries alleged, other than the heel sore, the pain resulting therefrom and the stiffness in the leg, did not result from the treatment of the fracture. It appeared from an examination on December 15, before the first cast was put on, that the plaintiff had arthritis and had had it when he was admitted to the hospital. The plaintiff claimed that his toe infection came from the heel sore but the defendants claimed that it was caused by an ingrowing toenail. The heel sore, however, was discovered January 11, more than five months prior to the toe infection, there was no evidence to show that it was ever infected and it did not spread as did the toe infection. The sore steadily healed. No causal connection having been shown between the heel sore and the toe infection, all the injuries attributable to such infection are due to causes for which the defendants are not responsible.

In the course of his appeal the plaintiff endeavored to base his claim for damages on the fact that the physician-defendant had, in disregard of his expressed wishes, applied the second cast so as to cover a part of his foot. Their action constituted, he contended, a technical assault and battery, for the consequences of which the defendants were liable. The court held, however, that the plaintiff could not, in the absence of any allegations in his complaint and evidence on the point at the trial, contend later that the defendants had committed a technical assault and battery. The complaint, the evidence and the ruling of the trial court, in the opinion of the Supreme Court, were convincing that the plaintiff proceeded at the trial on the theory that his action was one for negligence. A party must stand on the right which he claims and asserts on the trial.

For the reasons stated, the order of the trial court refusing to grant the patient a new trial was affirmed.—*Nelson v. Nicollet Clinic et al. (Minn.)*, 276 N. W. 801.

Society Proceedings

COMING MEETINGS

- American Association for the Study of Goiter, Washington, D. C., Sept. 12-14. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.
- American Congress of Physical Therapy, Chicago, Sept. 12-15. Dr. Richard Kovacs, 1100 Park Ave., New York, Secretary.
- Colorado State Medical Society, Estes Park, Sept. 7-10. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Idaho State Medical Association, Sun Valley, Sept. 6-10. Dr. Harold W. Stone, 105 North Eighth St., Boise, Secretary.
- National Medical Association, Hampton, Va., Aug. 15-19. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
- Oregon State Medical Society, Timberline Lodge, Aug. 24-27. Dr. Morris L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
- Society of American Bacteriologists, San Francisco, Aug. 30-Sept. 1. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin-Madison, Wis., Secretary.
- Utah State Medical Association, Ogden, Sept. 1-3. Dr. D. G. Edwards, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Washington State Medical Association, Bellingham, Aug. 29-31. Dr. W. V. Spickard, 1303 Fourth Ave., Seattle, Secretary.
- Wisconsin State Medical Society of Milwaukee, Sept. 13-16. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.
- Wyoming State Medical Society, Laramie, Aug. 7-9. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

7: 441-492 (June) 1938

- Treatment of Organic and Inorganic Diseases of the Stomach. J. H. Musser, New Orleans.—p. 441.
Obstetric Problems from the Medical Viewpoint. J. R. Barber, Birmingham.—p. 446.
Metrazol Treatment of the Psychoses. F. A. Kay, Tuscaloosa.—p. 450.
Psychogenic Factors in the Medical History. G. Walsh, Fairfield.—p. 455.

American Journal of Cancer, New York

33: 1-166 (May) 1938

- Role of Neural Crests in Embryonal Adenosarcomas of Kidney. P. Masson, Montreal, Canada.—p. 1.
*“Inflammatory Carcinoma” of the Breast. G. W. Taylor and A. Meltzer, Wrentham, Mass.—p. 33.
Chemical Compounds as Carcinogenic Agents: First Supplementary Report: Literature of 1937. J. W. Cook and E. L. Kennaway, London, England.—p. 50.
Spontaneous Bone Tumors of Mice. F. C. Pybus and E. W. Miller, Newcastle-on-Tyne, England.—p. 98.
Transmissible Leukemia in the A Strain of Mice. J. H. Lawrence and W. U. Gardner, New Haven, Conn.—p. 112.
Chromosomes in Man. E. Schwarz, Vienna, Austria.—p. 120.

“Inflammatory Carcinoma” of the Breast.—Between July 1927 and January 1937, 885 cases of carcinoma of the female breast were treated at the Pondville Hospital, and of this number thirty-eight (4 per cent) were of the inflammatory type. Taylor and Meltzer define inflammatory carcinoma as that condition characterized by redness, heat, edema, orange-peel appearance of the skin, diffuse and ill defined swelling and sometimes pain and tenderness. These features are not all present in every case, and those which are present may vary in degree. No one of them alone is sufficient to justify the clinical diagnosis. There are at least two clinical varieties of the disease: (1) in that designated as primary the inflammatory signs seem to arise simultaneously with the carcinoma in a previously normal breast and (2) in that designated as secondary the inflammatory manifestations may appear suddenly in a breast which has long been the seat of a scirrhous carcinoma or in the mate of such a breast or it may follow mastectomy for scirrhous carcinoma either at the original site or in the opposite breast. Although the disease is rare after 70, its age distribution is the same as for cancer of the breast in general. Inflammatory signs may result in mistakes in diagnosis and injudicious early therapy. The disease spreads rapidly in the superficial lymphatic structures of the wall of the chest. Multiple visceral metastases occur early, but the rapid course of the disease often does not permit clinical recognition. Bone metastases were recognized roentgenologically in only four primary cases. The patients maintain remarkably good health through the greater part of the course, and cachexia is unusual. Death is most often due to intrathoracic complications. The average duration of life in the twenty-five primary cases was 21.3 months, in the thirteen secondary cases 10.8 months after the appearance of inflammatory signs. The inflammatory signs of edema, redness and heat are due to extensive lymphatic blockage by cancer and congestion of the subpapillary plexus. The large fatty breast seems a predisposing factor, as does the hyperplastic breast of late pregnancy or lactation. Surgery is followed by prompt evidence of supraclavicular disease, cutaneous recurrence or invasion of the opposite breast. X-rays seem to give the best palliative results.

American Journal of Medical Sciences, Philadelphia

195: 717-864 (June) 1938

- Pathologic Changes Produced by Gastrectomy in Young Swine. S. Petri, F. Nørgaard and J. Bing, Copenhagen, Denmark.—p. 717.
Observations on Etiology of Toxemias of Pregnancy: IV. Primary Role of Plasma Proteins in Conditioning Water Retention and Edema Formation in Normal and “Toxic” Pregnancy. M. B. Strauss, Boston.—p. 723.
The Sedimentometer: Photographic Recorder of Suspension Stability of Erythrocyte. T. Lee, London, England.—p. 729.
*Influence of Anemia on Blood Sedimentation. J. W. Cutler, F. R. Park and B. S. Herr, Philadelphia.—p. 734.
Normal Venous Pressure as Determined by Direct Method. A. A. Holbrook, Milwaukee.—p. 751.
Body as Volume Conductor and Its Influence on Electrical Field of the Heart. J. E. Benjamin, H. Landt and L. R. Culver, Cincinnati.—p. 759.
Prognosis in “Potential Rheumatic Heart Disease” and “Rheumatic Mitral Insufficiency.” J. A. Boone, Charleston, S. C., and S. A. Levine, Boston.—p. 764.
Transient Nodal Rhythm Following Use of Sulfanilamide. D. L. Dozzi, Philadelphia.—p. 771.
Manipulation of Glucose Tolerance by Diet. E. P. McCullagh and C. R. K. Johnston, Cleveland.—p. 773.
*Dietary versus Insulin Treatment of the Obese Diabetic Patient. F. Fetter, J. K. Durkin and G. G. Duncan, Philadelphia.—p. 781.
Effect on Blood Cells of Fetal Rat Produced by Inhalation of Carbon Tetrachloride by the Mother During Gestation. Estelle Briesse, Rochester, Minn.—p. 787.
*Effect of Iontophoresis with Acetyl-Beta-Methylcholine Chloride on Rate of Peripheral Blood Flow. H. Montgomery, H. E. Holling and C. K. Friedland, Philadelphia.—p. 794.
Changes in Blood Lipids During Insulin Treatment of Schizophrenia. L. O. Randall, D. E. Cameron and J. M. Looney, Worcester, Mass.—p. 802.
High Dosage Atropine Therapy in Chronic Encephalitic Parkinsonism. S. P. Jewett, H. M. Rosow and E. Pumpian-Mindlin, New York.—p. 809.
Studies of Blood Proteins in Delirium Tremens. J. M. Thomas, Louisville, Ky.; E. V. Semrad, Waverley, Mass., and R. M. Schwab, Boston.—p. 820.

Influence of Anemia on Blood Sedimentation.—Cutler and his associates find that anemia plays a minor part in the rapidity of blood sedimentation. 1. When pronounced anemia is associated with a disease which in itself is not distinguished by an increased sedimentation rate, such as sickle cell anemia or bleeding duodenal ulcer, sedimentation of erythrocytes is always slow, in which case, in spite of the decided anemia, sedimentation is increased little beyond normal. 2. When severe anemia is associated with a disease which in itself may produce a moderate increase in sedimentation, the sedimentation index will be high depending on the degree of anemia present but the graph will have only a slight curve. A good example is bleeding fibromyoma of the uterus which has undergone mild degeneration. Anemias in which the counts are higher than 3,500,000 are without appreciable significance. 3. When marked anemia is associated with a disease which in itself may produce rapid sedimentation, such as advanced, ulcerating cancer, the sedimentation index will be high but there will also be an unquestioned steepness to the graph. The steepness of the graph reflects disease; the index portrays anemia as well. Blood sedimentation and anemia are independent phenomena and have little in common.

The Obese Diabetic Patient.—Fetter and his co-workers have customarily given a low calory diet to uncomplicated overweight (40 per cent) diabetic patients so as to reduce the weight gradually (not more than 2 pounds [1 Kg.] a week) to somewhere near the calculated ideal weight for the patient's age, sex and height. With the reduction in weight and the simultaneous reduction of the total metabolism, the apparent need for insulin disappears. Insulin, of course, is given if it is needed. If such a patient (40 per cent or more overweight) is put on a low calory diet and maintains his weight, large doses of insulin are needed to control the diabetes. Obviously, if simple weight reduction can achieve the same results as large doses of insulin it is the treatment of choice in obese diabetic patients, especially as the loss of weight is in itself a desirable end.

Iontophoresis and Peripheral Blood Flow.—Montgomery and his colleagues determined, by direct measurement, the effect of 0.2 per cent acetyl-beta-methylcholine chloride iontophoresis on blood flow in the limbs of normal persons. A few corresponding observations have also been made on patients with peripheral vascular disease. Iontophoresis through a plethysmo-

Modified Sturmdorf Tracheloplasty.—During the last nine years Drosin has been doing tracheloplasties by a modified Sturmdorf technic. It differs from the standard method essentially in the fact that, instead of transverse suture aspects being closed and united with transverse sutures, longitudinal suture aspects are opposed and united with longitudinal sutures. The technical differences and advantages are that better results are obtained in the longitudinal method because (1) the inverting lips, in view of their tapering points, can be drawn up to a somewhat higher level in the cervical canal than can be done with the transverse ends in the classic Sturmdorf method, thus adapting the surfaces more thoroughly; (2) the lower stitch further precludes the possibility of any loose space in which blood might accumulate or hemorrhage take place, and (3) its execution is simpler and easier than the Sturmdorf method.

Anatomical Record, Philadelphia

71: 1-124 (May) 1938

- Effect of Administering Frog Anterior Pituitary Substance to Immature Female Mice. A. Elizabeth Adams and Gertrude Tukey, South Hadley, Mass.—p. 1.
Studies of the Islands of Langerhans After Continuous Intravenous Injection of Dextrose. C. A. Woerner, Chicago.—p. 33.
Some Effects of Testosterone and Testosterone Propionate in the Rat. C. R. Moore and Dorothy Price, Chicago.—p. 59.
Review of Golgi Apparatus: Part III. H. Kirkman, Palo Alto, Calif., and Aura E. Severinghaus, New York.—p. 79.
Effect of Male Hormone Substance on Testes and on Spermatogenesis. J. B. Hamilton, Albany, N. Y., and S. L. Leonard.—p. 105.

Annals of Medical History, New York

10: 197-278 (May) 1938

- Carolus Linnaeus, Physician and Botanist. B. H. Larsson, Detroit.—p. 197.
Southern California Medicine. J. W. Shuman, Los Angeles.—p. 215.
Bennett Dowler, a Forgotten Physiologist. W. J. Meek, Madison, Wis.—p. 237.
The First Authentic Case of Major Trigeminal Neuralgia and Some Comments on the History of This Disease. F. H. Lewy, Philadelphia.—p. 247.
Arnold of Villanova on Epilepsy. Edna P. von Storch and T. J. C. von Storch, Boston.—p. 251.
Bahá'ul-Douleh and His "Quintessence of Experience." C. Elgood, London, England.—p. 261.

Annals of Surgery, Philadelphia

107: 881-1050 (June) 1938

- Adrenal Cortical Tumors and Their Treatment: Study of Seven Operated Cases. W. Walters and E. J. Kepler, Rochester, Minn.—p. 881.
The Surgical Problem of Hypertension. L. Davis and M. H. Barker, Chicago.—p. 899.
Clinical Results of Celiac Ganglionectomy in Treatment of Essential Hypertension. G. Crile, Cleveland.—p. 909.
Advantages of Abdominal Approach to Inguinal Hernia. C. Williams, Richmond, Va.—p. 917.
Diverticulum of the Female Urethra. W. E. Lower and T. W. Tormey Jr., Cleveland.—p. 923.
Modern Treatment of Varicose Veins as Indicated by Comparative Tourniquet Test. H. R. Mahorner and A. Ochsner, New Orleans.—p. 927.
Repair of Surface Defects of the Hand. J. B. Brown, St. Louis.—p. 952.
Influence of Preoperative Medication on Postoperative Complications: Statistical Study. E. V. Mastin, St. Louis.—p. 972.
Internal Fixation of Fractures of Neck of the Femur: Analysis of Results. R. G. Carothers, Cincinnati.—p. 980.
Lumbosacral and Sacro-Iliac Strain Causing Low Back Pain: Review of 150 Cases. E. L. Gilcreest, San Francisco.—p. 988.
Glass Rods and Other Items in Technic of Abdominal Incision. W. O. Bullock, Lexington, Ky.—p. 996.
Ureoparotitis. A. Stengel Jr., Philadelphia.—p. 1000.
Spiraeck's Gastrotomy: Analysis of Thirteen Cases with Review of Technic. D. H. Wagner, Chicago.—p. 1005.
Endometriosis of Rectum and Sigmoid: Review of Literature and Case Report. J. D. Schofield and H. E. Bacon, Philadelphia.—p. 1022.
Early Cardiac Decompensation in Traumatic Arteriovenous Aneurysms. J. M. Mason, G. S. Graham, Birmingham, Ala., and J. D. Bush, Decatur, Ala.—p. 1029.

Adrenal Cortical Tumors.—Walters and Kepler state that seven consecutive patients who had adrenal cortical tumors operated on at the Mayo Clinic between 1924 and 1937 recovered. All seven patients presented, in varying degrees, the signs and symptoms referred to as the "adrenal cortical syndrome." In five, the removal of an encapsulated tumor resulted in prompt regression of symptoms. In the other two patients the carcinomatous tumor had penetrated the adrenal capsule and, within a period of eighteen months after its removal, the tumor

recurred with fatal consequences. Since most adrenal cortical tumors are relatively malignant but in the early stages are definitely encapsulated, it is important to make the diagnosis early and to remove the lesion before the cells have penetrated the capsule and invaded adjacent structures. The similarity of the clinical syndrome produced by an adrenal cortical tumor to that of pituitary basophilism or "Cushing's disease" may lead to the erroneous decision that pituitary basophilism is present. Since treatment of the latter lesion is entirely dependent on roentgenotherapy, from which little more than palliative benefit is obtained, and in view of the fact that adrenal cortical tumors are frequently the cause of a similar syndrome and that usually their removal can be readily accomplished, the adrenal should be explored if patients present this syndrome, provided their condition permits. Tumors of the adrenal cortex are encountered most frequently among women and are characterized by variable changes in secondary sexual characteristics, such as cessation of menstruation, occasionally hypertrophy of the clitoris, abnormal growth of hair with masculine distribution and characteristic lesions of the skin such as a florid complexion accompanied by acne and purplish striations. Among girls, tumors of the adrenal cortex tend to produce precocious puberty, more masculine than feminine in character. The disease seldom occurs among males, either young or old. The clinical picture is not pathognomonic. Similar clinical pictures may result from hyperplasia of the adrenal cortices with or without thymic tumors with tumors of the gonads, and various intracranial lesions not directly involving the pituitary body. The presence of a high content of estrogenic substance in the urine is suggestive of the presence of adrenal cortical carcinoma provided pregnancy is excluded. Injection of air about the adrenal gland has been of aid in localizing some of the adrenal tumors.

Surgical Problem of Hypertension.—Davis and Barker define essential hypertension as a disorder with one or more etiologic factors, in which the blood pressure is more than 160 mm. systolic and 90 mm. diastolic, with exacerbations and remissions which ultimately result in pathologic changes in one or more parts of the cardiovascular-renal system, notably arteriosclerosis, cardiac hypertrophy, nephrosclerosis and disease of the ocular vessels. The degree and speed of the development of these changes depend somewhat on the age of the patient and the height of the blood pressure; the younger the patient and the higher the blood pressure, the more rapidly progressive is the associated vascular disease. Experimentally, hypertension has been produced in four ways: by removal of the carotid sinus and the cardio-aortic moderator nerves, by reducing the caliber of the main renal arteries by the application of an adjustable silver clamp, by ligation of the carotid, vertebral and spinal arteries and by the administration of vitamin D. The results of experimental studies cannot be transferred directly to the problem of hypertension in man. Clinically, the criteria for classifying patients as cases of essential hypertension vary considerably among various groups of workers. Yet, before surgical procedures can be evaluated, agreement must be reached as to exactly which type of patient is being operated on or should be operated on. The authors' work has been concerned with patients suffering from hypertension and with the production of experimental hypertension. Careful clinical studies were made of the patients on whom they operated. The following criteria are used in choosing patients from the Renal-Vascular Clinic for splanchnicectomy: 1. All patients have a severe grade of essential hypertension. Systolic pressures are 200 or over and the diastolic pressures are above 100 mm. of mercury. 2. As far as can be detected by a careful history, physical examination and laboratory data there is no evidence of chronic glomerular renal disease. 3. There is no evidence of peripheral arterial sclerosis. Angina pectoris or evidence of a high degree of spasm in the retinal vessels, or angiospastic renal disease, are not contraindications to operation. 4. Throughout their months or years of observations, blood pressures showed normal fluctuations; that is, the pressures were not always at a definite level. 5. All the patients have been given a thorough trial with potassium thiocyanate over a period of several months up to two years. Cyanates are discontinued because the patients show cyanate intoxication or they are insensitive to cyanates.

Archives of Pathology, Chicago

20: 1-448 (July) 1938. Partial Index

- Ludvig Hektoen: A Biography and an Appreciation. M. Fishbein, Chicago.—p. 3.
- Bibliography of the Writings of Ludvig Hektoen.—p. 20.
- Giant Cells in Cystitis. H. G. Wells, Chicago.—p. 32.
- Mode of Origin of Experimental Gastric Ulcer Induced by Cinelophen. J. P. Simonds, Chicago.—p. 44.
- A New Streptococcus from Dental Caries. Ruth Tunnicliff and Carolyn Hammond, Chicago.—p. 61.
- Acute Methyl Alcohol Poisoning: Report of Twenty-Two Instances with Postmortem Examinations. F. R. Menne, Portland, Ore.—p. 77.
- Pneumococcus Antitoxin. G. F. Dick and A. K. Boor, Chicago.—p. 93.
- Origin and Pathology of Common Terminal Pneumonia. V. H. Moon, Philadelphia.—p. 132.
- Use of Polyvalent Antipneumococcus Serum, Kyes. W. E. Cary, Chicago.—p. 147.
- *Leukoplakia of the Rectum. V. C. David, Chicago.—p. 151.
- Reactions to Blood Transfusion: Attempt at Etiologic Classification; Therapy Based Thereon. B. Fantus, L. Seed and Elizabeth Schirmer, Chicago.—p. 160.
- Diverticulitis of the Colon: Preliminary Report of Study of Its Potential Role as Focus of Infection in Systemic Disease. G. H. Coleman and J. A. Capps, Chicago.—p. 207.
- Bacillary Dysentery in Children: Study of 356 Cases from the Children's Division in the Cook County Hospital, Chicago. M. L. Blatt and N. G. Shaw, Chicago.—p. 216.
- Synovial Membrane and Fluid in Rheumatoid Arthritis. E. P. Jordan, Chicago.—p. 274.
- Guillain-Barré Syndrome and Related Conditions (Meningoradiculomyelitis and Meningomyelo-encephalitis). P. Bassoe, Chicago.—p. 289.
- Clinical Study of Epidemic Poliomyelitis. L. W. Hunt, Chicago.—p. 312.
- Critical Review of Methods for the Evaluation of Antiseptics. P. G. Heineham, Albany, N. Y.—p. 320.
- Nontuberculous Disease of Upper Lobes of Lungs Simulating Tuberculosis. H. R. Lovett, Oak Terrace, Minn.—p. 330.
- Cause and Surgical Relief of Sterility in Women. A. H. Curtis, Chicago.—p. 354.
- Acute Endocarditis Caused by Bacterium Paratyphosum B. J. Meyer and Katharine M. Howell, Chicago.—p. 368.
- Sensitiveness to Insulin and Optimal Diets in Diabetes. W. H. Nadler, Chicago.—p. 395.
- *Clinical and Statistical Study of Sore Throat in Young Adults. P. S. Rhoads, Evanston, Ill., and M. L. Afremow, Chicago.—p. 403.

Leukoplakia of the Rectum.—The lesions that David describes (five cases) as leukoplakia of the rectum are thick, rough, grayish white plaques reaching upward from the mucocutaneous line on to what normally is columnar epithelium. The lesions appear to be finger-like extensions upward from the mucocutaneous line. Fissures occurred in the lesions in three of the cases, and in the fissured area the hypertrophy was especially marked. Carcinoma at the mucocutaneous line was suggested. Marked evidence of inflammation of the surrounding mucosa was present. The process had been present for years in two patients and was associated with anal dermatitis and an irritating acrid discharge from the rectum. The patients complained not only of the itching but also of pain on defecation, constipation and a feeling of pressure in the rectum. In all five patients the lesions were removed by dissection. In the two patients in whom the lesions were most extensive, recurrences took place at the mucocutaneous line within a year. In the other three patients the lesions were small, from 0.5 to 1 cm. in diameter, and were above the chronic rectal fissures or associated with hemorrhoids. This again emphasizes the inflammatory factor. Histologically, the characteristic picture was one of hyperkeratinization of the patches of squamous cells with infiltration by the round cells and fibrosis in the stroma beneath. Since the lesions following treatment with radium disappeared in one case in which there was recurrence and the immediate recurrence following operative removal in the two cases in which the lesions were extensive, it seems that radium offers the best possibility of cure. In two cases in which the lesions were small, excision resulted in cure.

Sore Throat in Young Adults.—Of the 240 nurses complaining of sore throat that Rhoads and Afremow studied, 159 had hemolytic streptococci in the throat or nose in considerable numbers and eighty-one had no hemolytic streptococci. In only 5 per cent of the patients with hemolytic streptococci and 20 per cent of those without hemolytic streptococci was sore throat merely a part of an "acute diffuse upper respiratory infection." Cervical adenopathy occurred in practically every one. A detailed analysis of the class of 1934 through three years of training revealed that on the average each nurse was off duty for illness seventy-five and a half days. Of this loss of time,

about 27 per cent was caused by acute tonsillitis, pharyngitis, sinusitis and laryngitis. The average time lost per attack was seventeen days in the group with hemolytic streptococci and fourteen days in the group without hemolytic streptococci. The duration and height of the fever, the period of disability and the severity and number of complications were all higher in the group with hemolytic streptococci than in the group without hemolytic streptococci and a little higher in the group with scarlet fever than in either of the other groups. No deaths occurred in the groups with nonspecific sore throat. Two deaths occurred in the group with scarlet fever. The highest incidence of sore throat was among the nurses in the Contagious Hospital. The much higher incidence of rheumatic complications in the group who reacted negatively to the Dick test after coming to the Cook County Hospital is probably accounted for by their previous experience with infections due to hemolytic streptococci. The nurses who harbored hemolytic streptococci in the nose as well as in the throat had a more severe clinical illness and more complications than the others. The small difference found between tonsillectomized, partially tonsillectomized and nontonsillectomized groups in respect to severity of attacks of sore throat was in favor of the last group. Cervic adenitis and sinusitis were more frequent in the nontonsillectomized group.

California and Western Medicine, San Francisco

48: 393-480 (June) 1938

- Physicians' Activities in the Field of Medicine. H. Morrow, San Francisco.—p. 402.
- Traumatic Rupture of the Spleen. E. Butler and W. Birnbaum, San Francisco.—p. 407.
- Is Paresis (Dementia Paralytica) Curable? Results in Personally Treated Cases. W. F. Schaller, San Francisco.—p. 409.
- The Treatment of Typhoid Fever in Children by Means of Lysed Vaccine. J. M. Frawley, Fresno.—p. 415.
- Primary Dysmenorrhea: Local Manifestation of a Constitutional Disease and Its Treatment. Marian Goldwasser, Los Angeles.—p. 418.
- Psychopathic Personality: As a Household Problem. E. W. Twitford, San Francisco.—p. 421.
- Ionization in Allergic Rhinitis. H. J. Hara, Los Angeles.—p. 424.
- Infections in the Danger Area of the Lips, Face and Nose. G. W. Walker and H. Awtrey, Fresno.—p. 427.
- Handwriting, a Neurologic Study. H. D. Eaton, Los Angeles.—p. 430.
- The Nutritional Problem in Toxemias of Contagious Diseases. M. Tobias, Los Angeles.—p. 435.
- Maxillary Sinus Irrigation Through the Ostia, with Anatomic and Clinical Demonstrations. C. E. Fitch, Los Angeles.—p. 438.
- Primary Tumors of the Ureter. J. J. Crane, Los Angeles.—p. 442.
- Stomach Mucosal Changes in A Vitaminosis. A. J. Cox Jr., San Francisco.—p. 444.

Endocrinology, Los Angeles

22: 631-740 (June) 1938

- Fate of Ova Accelerated in Their Rate of Passage Through Fallopian Tubes of Mice by Massive Injections of Progynon-B. H. O. Burdick and Rae Whitney, Alfred, N. Y.—p. 631.
- Acceleration of Rate of Passage of Fertilized Ova Through Fallopian Tubes of Rabbits by Massive Injections of Progynon-B. Rae Whitney and H. O. Burdick, Alfred, N. Y.—p. 639.
- *Clinical Indications for Anterior Pituitary-like Sex Hormone. R. L. Schaefer, E. A. Sharp and J. V. Lamm, Detroit.—p. 643.
- Ovaries Secrete Male Hormone: IV. Effect of Ovarian Androgen on Accessory Size in the Mouse. R. T. Hill, New Haven, Conn., and M. T. Strong, Bloomington, Ind.—p. 663.
- Effect of Coitus on Gonadotropic Content of Pituitary Glands of Pregnant Rabbits. A. W. Makepeace, G. L. Weinstein and M. H. Friedman, Philadelphia.—p. 667.
- *Antihormone Studies in Boys Treated with Anterior Pituitary-like Hormone for Genital Underdevelopment. G. B. Dorff, New York.—p. 679.
- Cytologic Evidence of Gonadotropic Activity of the Rabbit's Anterior Hypophysis. H. B. Friedgood and A. B. Dawson, Boston.—p. 674.
- Insulin Shock in Relation to Components of Adrenals and Hypophysis. H. G. Swann and J. W. Fitzgerald, Chicago.—p. 687.
- Respiratory Effects of Anterior Lobe Extracts. Cornelia Wetzlar-Lipetz and B. P. Wiesner, London, England.—p. 693.

Indications for Gonadotropic Substance.—Schaefer and his associates treated sixteen cases of genital hypoplasia and cryptorchidism, fifteen cases of amenorrhea and thirteen cases of menometrorrhagia with gonadotropic substance. Results were uniformly good. Competent diagnostic procedures should be instituted to rule out organic disease and also to determine those changes which indicate gonadal immaturity. This will serve the purpose of early recognition, which is of utmost importance in correcting preadolescent endocrine imbalances. Dosage

be individualized and adequate to bring about the expected biologic result. Treatment should be prolonged and continuous before one concludes that the existing imbalance cannot be corrected. Gonadotropic substance is the maturing factor of the gonads.

Gonadotropic Substance for Genital Underdevelopment.—Nineteen boys, from 7 to 13 years of age and showing genital underdevelopment (intra-abdominal cryptorchidism) received hypodermic injections of some commercial brand of gonadotropic substance. The amount that Dorff administered to any one patient varied from 11,200 rat units given over a period of three months to 112,300 rat units given over a period of seventeen months. Twenty specimens of serum were taken from these boys and studied for the presence of antagonistic substances or antihormone which might have resulted from the treatment. These tests showed that in all cases the serums were free from antihormone. It is dubious whether the lack of response in some cases was due to the effects of antihormone. The lag or apparent halt in the genital development in some of the cases was overcome by increased dosage or by a change in the commercial brand of the same principle. In such cases the lag was probably due to a need for greater stimulation from bigger doses or to a possible tolerance developed to that particular product. In the few cases of cryptorchidism in which neither an increase nor a change could initiate or complete the descent, the author believes a true mechanical obstruction existed. He does not believe that this failure was due to the presence of antagonistic substances, since in all these cases satisfactory responses could be provoked in the rest of the genital apparatus.

Journal of Experimental Medicine, New York

67: 827-986 (June) 1938.

- Bile and Blood Plasma Cholesterol as Influenced by Blood Destruction in Normal and Bile Fistula Dogs. A. Wright and W. B. Hawkins, Rochester, N. Y.—p. 827.
- White Cell Morphology in Rabbits with Induced Peritoneal Exudates. E. Ponder and J. Macleod, Cold Spring Harbor, Long Island, N. Y.—p. 839.
- Studies on Uncomplicated Coryza of the Domestic Fowl: IX. Cooperative Action of Haemophilus Gallinarum and Coccobacilliform Bodies in Coryza of Rapid Onset and Long Duration. J. B. Nelson, Princeton, N. J.—p. 847.
- Agglutination of Plasmodium Knowlesi by Immune Serum. M. D. Eaton, New York.—p. 857.
- Complement Fixation Reaction in Monkey Malaria. L. T. Coggeshall and M. D. Eaton, New York.—p. 871.
- Fate of Vaccinia Virus on Cultivation in Vitro with Kupffer Cells (Reticulo-Endothelial Cells). J. W. Beard and P. Rous, New York.—p. 883.
- *Bleeding Tendency and Prothrombin Deficiency in Biliary Fistula Dogs: Effect of Feeding Bile and Vitamin K. H. P. Smith, E. D. Warner, K. M. Brinkhous and W. H. Seegers, Iowa City.—p. 911.
- Meningo-Encephalitis in Chicks Produced by Intracerebral Injection of Fowl Pox Virus. G. J. Buddingh, Nashville, Tenn.—p. 921.
- Study of Behavior of Fowl Pox Virus Modified by Intracerebral Passage. G. J. Buddingh, Nashville, Tenn.—p. 933.
- Method for Determining Differential Sedimentation of Proteins in High Speed Concentration Centrifuge. T. P. Hughes, E. G. Pickels and F. L. Horsfall Jr., New York.—p. 941.
- Demonstration of Lesions and Virus in Lungs of Mice Receiving Large Intraperitoneal Inoculations of Epidemic Influenza Virus. E. R. Rickard and J. Francis Jr., New York.—p. 953.

Bleeding Tendency and Prothrombin Deficiency.—Smith and his colleagues present data on the bleeding tendency and prothrombin deficiency in thirty-six fistula dogs. In general, their work agrees with that of Greaves and Schmidt. They find that the plasma prothrombin falls eventually to low levels and bleeding commonly occurs. Faulty absorption of vitamin K from the intestine in these animals is an important causative factor. Feeding bile permits absorption of the traces of this vitamin normally present in mixed diets, and as a result a slow rise in the level of prothrombin is observed. If a standard diet is supplemented with large amounts of vitamin K concentrate the rise of prothrombin is rapid, provided bile or bile salt is supplied to aid in the absorption. Variations in the rate of prothrombin depletion in biliary fistula dogs kept on a constant diet indicate the existence of additional factors which require further study. Experience indicates that vitamin A and D supplements do not correct the deficiency of prothrombin in biliary fistula animals.

Journal of Lab. and Clinical Medicine, St. Louis

23: 887-998 (June) 1938

- *The Takata-Ara Reaction: I. Clinical Significance. J. Chasnoff and S. Solomon, New York.—p. 887.
- Id.: II. Mechanism, with Special Reference to Influence of Ammonia Blood Level. J. Chasnoff and S. Solomon, New York.—p. 894.
- Active Immunization Against Tetanus by Means of Tetanus Toxoid Alum-Precipitated Refined. H. Gold, Chester, Pa.—p. 903.
- Electrocardiographic Changes Following Intravenous Administration of Magnesium Sulfate: Experimental Study on Dogs. J. R. Miller and T. R. Van Dellen, Chicago.—p. 914.
- *Incidence of Positive Immunologic Reactions for Undulant Fever: Studies of 5,000 Blood Serums and 491 Skin Tests. I. Gersh and E. R. Murgage, Denver.—p. 918.
- Clinical Utilization of Blood Studies. R. A. Kilduffe, Atlantic City, N. J.—p. 922.
- *Studies on Anaphylaxis with Insulin. C. Bernstein Jr., J. B. Kirsner and W. J. Turner, Chicago.—p. 938.
- Relationship of Insulin Hypoglycemia to Method of Administration and Type of Insulin. J. B. Kirsner and C. Bernstein Jr., Chicago.—p. 944.
- Comparison of Antipernicious Anemia Potency of Depepsinized and Undeepsinized Gastric Mucosa. S. Morrison, Baltimore.—p. 949.
- The Ide Test for Syphilis: Comparative Study with Kline Heated Serum Tests and Complement Fixation Methods, with Clinical Evaluation in More Than 1,000 Patients. C. R. Rein and Clarise E. Hazay, New York.—p. 954.
- Rapid Method for Staining Blood Smears: Modification of Original Wright Technic. L. H. Goldberg, Nyack, N. Y.—p. 959.
- Practical Stain for Spirochetes of Syphilis and Vincent's Angina. H. D. Bailey, Los Angeles.—p. 960.
- Comparison of Methods for Preservation of Hemolytic Activity of Guinea Pig Complement. J. E. Faber Jr. and L. A. Black, College Park, Md.—p. 961.
- Use of Daphnia in Study of Cathartic Action. W. Tinsley, Chicago.—p. 985.

The Takata-Ara Reaction.—Chasnoff and Solomon performed the Takata-Ara test on forty-eight patients with definite hepatic disease and twenty-seven in whom there was no clinical reason to suspect any involvement of the liver. The results are in accord with those of most investigators who assert that the test is positive in advanced cirrhosis but may be negative in early cirrhosis. A negative reaction first and then a positive reaction was obtained in only two of the authors' cases of cirrhosis. But, since the time interval between the two tests was one month and four days, respectively, it is unwise to attempt to attribute this change to a progression of the hepatic disease from an early to an advanced stage. Furthermore, in both instances, when the test was negative, the patient clinically showed evidences of advanced hepatic cirrhosis. A weak positive reaction was obtained in a patient with a peptic ulcer, in whom the reaction was negative one week later. This difference in the results indicates the unreliability of one determination in any suspected case. As a diagnostic test in cirrhosis the Takata-Ara reaction is of little value, since by the time the reaction becomes positive the diagnosis can usually be made clinically. The test was positive in all cases in which there was any degree of certainty about the diagnosis of carcinoma. The authors therefore cannot subscribe to the view that the test is of differential diagnostic value between carcinoma and cirrhosis. A small proportion of cases with an enlarged liver due to cardiac failure show a positive Takata-Ara reaction. The results in other parenchymatous disorders of the liver are inconstant. The test is positive in some cases of hepatocellular jaundice and negative in others. Positive reactions were obtained in six cases in which there was clinically no involvement of the liver. In those cases in which the test was performed simultaneously on ascitic fluid and blood serum a discrepancy was found between the reactions obtained in the two mediums. The Takata-Ara reaction cannot be regarded as a specific test for cirrhosis of the liver, but a negative reaction in any suspected case would tend to cast doubt on the diagnosis.

Immunologic Reactions for Undulant Fever.—Gersh and Murgage examined 5,000 consecutive specimens of blood submitted for the Wassermann test by the hospital and its outpatient department for Brucella agglutinins by the macroscopic tube method. Of these, fifty-one showed an agglutination titer of 1:25 and nine had a positive agglutination reaction in both the 1:25 and 1:100 dilutions. An almost equal incidence of positive agglutination reactions was obtained among the men and women of the series. At the time the agglutination tests were being carried out, 491 intradermal tests were also done on the hospital patients. A majority of these hospital patients had been living on farms or in farming districts. The intradermal

test yielded a much higher percentage of positive reactions (12.2) than did the agglutination test (1.2). Of the sixty patients who had positive skin reactions, fifty-five gave a history of drinking raw cow's milk, one drank raw goat's milk, two stated that they drank only pasteurized milk and two consumed only canned milk during the past two years. Of the thirty-nine patients showing positive agglutination reactions from whom a history was obtained of the kind of milk that they drank, thirty-one drank mostly raw milk during the past two years.

Anaphylaxis with Insulin.—Bernstein and his associates state that guinea pigs injected parenterally with commercial and crystalline insulin reacted with anaphylaxis on subsequent intravenous injection. Guinea pigs sensitized by subcutaneous or intravenous injections of insulin reacted with varying degrees of anaphylactic shock at intervals of three and six weeks following sensitization. The first shock at three weeks was generally less severe than the second at six weeks, with the same shock dose of insulin. When the guinea pigs were sensitized with a combination of horse serum and insulin, some anaphylaxis or insulin was obtained from a shocking dose three weeks after the last sensitizing injection.

Journal-Lancet, Minneapolis

58: 265-304 (June) 1938

- Combined Uterotubal Insufflation and Hysterosalpingography: Office Method. C. J. Ehrenberg, Minneapolis.—p. 265.
Peptic Erosions. E. A. Doles, Havre, Mont.—p. 267.
Interpretation of Roentgenograms of Fractures of Extremities. H. M. Berg, Bismarck, N. D.—p. 269.
Attitude of the Internist Concerning the Damaged Heart in Pregnancy. Olga S. Hansen, Minneapolis.—p. 278.
Anterior Pituitary-Gonad Relationship in the Female, with Clinical Application. A. A. Werner, St. Louis.—p. 280.
After the Diagnosis, What Next? J. A. Myers, Ruth E. Doynton, T. L. Streukens Jr., Minneapolis, and P. T. Y. Ch'iu, Peiping, China.—p. 283.
Value of Iodine and Gold in Treatment of Alcoholism. F. S. Macy, Brooklyn, and W. D. Silkworth, New York.—p. 291.
Does Our Physical Activity Program Function as Health Education? W. H. York, Princeton, N. J.—p. 292.

The Damaged Heart in Pregnancy.—From the reports of various antepartum clinics it appears to Hansen that about per cent of all pregnant women admitted require special diologic study because of symptoms or signs of circulatory normality, but only about 1 per cent will be found to have inite cardiac damage. Of these from 90 to 95 per cent are the rheumatic type, with mitral stenosis predominant, alone combined. Congenital, toxic, hypertensive and bacterial ons constitute the remainder almost entirely. While the dence of failure is highest during pregnancy, the incidence leath is maximum during labor or a day or two later. Fatal ompensation most frequently appears during labor, but death e deferred for a few days. Pulmonary edema, shock, monia, embolism or pulmonary infarction may follow close the cardiac failure, and death from sepsis may be deferred a week or two. The ultimate prognosis of the 95 per cent survive the puerperium seems to depend on the natural se of the cardiac disease itself. Jensen and others found pregnancy does not increase the death rate in rheumatic asc but only accelerates the natural course of the pathologic ess. There is only one reason for interruption of pregnancy e failure to improve compensation by adequate medical is—and that is a doubtful reason, because the outcome is ally hopeless either way. Cardiac failure in pregnancy is able to the modern methods of diagnosis and treatment, as is cardiac failure without pregnancy. Radical obstetric dures are seldom necessary, if ever, for cardiac reasons only add to the cardiac load which the internist tries to en.

nal of Nervous and Mental Disease, New York

87: 677-824 (June) 1938

- Idiocortication in Chimpanzee, Baboon, Macaque, Potto, Cat and ati: Study in Encephalization. A. E. Walker and J. F. Fulton, w Haven, Conn.—p. 677.
on Prince, M.D. 1854-1929. M. Moore, Boston.—p. 701.
es of Neuropsychiatric Data in Relation to Motion of Growth: ulin Hypoglycemia Therapy of Schizophrenia Viewed as an Induced irth Process: Preliminary Report. D. E. Schneider, New York. 711.
id Secretory Rate in Schizophrenic Patients. E. I. Strongin and E. Hinsie, New York.—p. 715.
rs of Tuberculum Sella. R. A. Groff, Philadelphia.—p. 725.

Journal of Pharmacology & Exper. Therap., Baltimore

63: 1-98 (May) 1938

- Respiratory Parasympathetic Action of Some Shorter Acting Barbituric Acid Derivatives. C. L. Burstein and E. A. Rovenstine, New York.—p. 42.
Growth, Life Span and Food Intake of White Rats Fed Dinitrophenol Throughout Life. M. L. Tainter, San Francisco.—p. 51.
Colloidal Uranium: I. Toxicity. A. H. Maloney and A. F. Burton, Washington, D. C.—p. 58.
Comparative Study of Effects of Various Anesthetic Agents on Emptying Time of the Stomach. C. K. Sleeth and E. J. Van Liere, Morgantown, W. Va.—p. 65.
Influence of Autonomic Drugs on Ejaculation. S. Loewe, New York.—p. 70.
Use of Dogs for Standardization of Digitalis. R. A. McGuigan and H. A. McGuigan, Chicago.—p. 76.
Duration of Anesthesia Produced in Dog by Repeated Administration of Dial and Nembutal. G. H. Ettinger, Kingston, Ont., Canada.—p. 82.
Effects of Drinking Sobisminol on Skeletal Changes in Growing White Rats. A. J. Lehman and W. Dock, San Francisco.—p. 88.
Use of Estrogenic Hormone in Experimental Peripheral Gangrene. L. Loewe and S. E. Lenke, New York.—p. 93.

Effects of Anesthetics on Emptying of Stomach.—Sleeth and Van Liere determined the normal emptying time of the stomach of four dogs by repeated fluoroscopic examinations, using a standard opaque meal. The effects of six anesthetic agents on the gastric emptying time were studied. All were found to prolong the gastric emptying time: chloroform by 64 per cent, ether by 40 per cent, nitrous oxide by 15 per cent, ethylene, cyclopropane and divinyl oxide each by about 7 per cent. It is felt that the severe anoxemia (5 per cent oxygen) accompanying the nitrous oxide anesthesia probably explains the longer delay with nitrous oxide than with the other gases. The data presented throw some light on the reason why chloroform and ether are more prone than the other agents to be followed by paralytic ileus. The general results obtained raise the question as to whether gastric motility may not be used as a criterion of general bodily response to certain external or environmental agencies.

Kansas Medical Society Journal, Topeka

39: 193-236 (May) 1938

- Observations on Physiology and Pharmacology of Coronary Circulation. A. M. Ginsberg, Kansas City, Mo., and O. O. Stoland, Lawrence.—p. 193.
Milk as a Source of Vitamin G. W. H. Riddell, Manhattan.—p. 196.
Roentgen Kymographic Study of the Heart. G. M. Tice, Kansas City.—p. 198.
Educational Requirements for Pharmacists. L. D. Haveahill, Lawrence.—p. 201.
Salivary Calculus of Wharton's Duct. W. W. Reed, Topeka.—p. 203.

Maine Medical Journal, Portland

29: 107-134 (June) 1938

- Surgical Risks from a Medical Standpoint. J. F. Kenney, Pawtucket, R. I.—p. 107.
Pericious Anemia with Subacute Combined Lateral Sclerosis. E. H. Drake, Portland.—p. 110.

Medicine

17: 155-260 (May) 1938

- The Mammalian Blood Platelet in Health and Disease. L. M. Tocantins, Philadelphia.—p. 155.

Minnesota Medicine, St. Paul

21: 385-454 (June) 1938

- Prevention of Spontaneous and Induced Abortion. F. J. Taussig, St. Louis.—p. 385.
Poliomyelitis in Minnesota in 1937. J. F. Pohl, Minneapolis.—p. 392.
Safaral Block Anesthesia: Consideration of Unusual Difficulties Encountered and Report of Two Unusual Cases. R. C. Adams and E. B. Tuohy, Rochester.—p. 397.
Diaphragmatic Hernia. E. M. Jones, St. Paul.—p. 402.
Symptomatology of Various Leukemic States. T. A. Peppard, Minneapolis.—p. 410.
Wohlfahrtia Vigil Cutaneous Myiasis in Minnesota: Case. C. Vander sluis and D. D. Whittemore, Bemidji.—p. 415.
Relative Value of Diagnostic Procedures in the Allergic Child. A. V. Stoesser and R. E. Cutts, Minneapolis.—p. 418.

Diagnostic Procedures in Allergic Child.—Stoesser and Cutts subjected 300 allergic children to the various accepted diagnostic procedures. 1. The pressure-puncture cutaneous tests using glycerinized concentrated liquid extracts were applied to all the children. The results of the treatment based on the positive reactions were satisfactory in 144 of the cases. The

procedure was of greatest value in hay fever and bronchial asthma and of little value in allergic rhinitis, urticaria and gastrointestinal allergy. 2. Elimination diets were tried. Excluding nine cases of hay fever, the diets were given to the remaining 147 children. Thirty-nine of the cases responded favorably. The best results were obtained in urticaria and gastrointestinal allergy. Only one third of the patients with eczema and one fourth of the patients with allergic rhinitis were helped by the diets. Little assistance was secured in bronchial asthma. 3. Intracutaneous tests were applied to the 103 children who did not respond to the trial diets. Treatment based on the results of this technic was satisfactory in thirty-eight of the cases. The procedure was of greatest value in allergic rhinitis, and assistance was obtained in determining the causative agent or allergen in 39 per cent of the cases of asthma. In eczema the results were worst. The allergic child can be treated with a minimum of time and effort if attention is given to the fact that each allergic disease has a diagnostic procedure or procedures to which it responds best.

Nebraska State Medical Journal, Lincoln

23: 161-200 (May) 1938

- The Acute Abdomen in Children—Appendicitis. H. B. Hamilton, Omaha.—p. 165.
Pyelitis. J. C. Moore, Omaha.—p. 167.
Functional Dysmenorrhea. Edna Watt Schrick, Lincoln.—p. 169.
Indications for Use of the Female Follicular Sex Hormone. J. J. Freymann, Omaha.—p. 173.
Sterility. M. E. Grier, Omaha.—p. 177.
Gonorrhea Complicating Pregnancy. F. P. Murphy, Omaha.—p. 180.
Fractures and Dislocations of the Clavicle. H. F. Johnson, Omaha.—p. 181.
"Under the Influence": Medicolegal Aspects. R. Lovelady, Sidney, Iowa.—p. 184.
Headache: Symptomatic and Undetermined. A. B. Lindquest, Omaha.—p. 187.
Tumors of Neck: Their Diagnosis and Treatment: Part II. Chronic Inflammatory Swellings of Neck. N. F. Hicken and A. M. Popma, Omaha.—p. 189.

New York State Journal of Medicine, New York

38: 757-832 (May 15) 1938

- Thyroid Disease: Important Problems in Diagnosis and Management. G. E. Beilby and J. C. McClintock, Albany.—p. 757.
Duodenal Stasis. J. M. Barnes, Buffalo, and D. E. Stedem, Kenmore.—p. 768.
Prostatic Disease: Determination of Method of Treatment. R. B. Henline, New York.—p. 773.
Skeletal System Manifestations During Secondary Syphilis. B. A. Newman and H. C. Saunders, New York.—p. 788.
The Scope and Form of Local Official Health Services, with Particular Reference to the City of New York. H. Emerson, New York.—p. 796.
Tinea Capitis in an Adult. H. V. Mendelsohn and E. Muskathliit, New York.—p. 803.

38: 833-916 (June 1) 1938

- Sulfanilamide in Treatment of Urologic Infections. T. M. Townsend and T. M. Mulcahy, New York.—p. 833.
Value of Physical Therapy in Rehabilitation of Common Hand Conditions. G. G. Martin, Buffalo.—p. 836.
Traumatic Lesions of Optic Chiasm: Report of Two Cases. E. H. Campbell and E. White, Albany.—p. 841.
Hydroa Estivale in Congenital Porphyria: In Case with Purplish Brown Teeth and Hirsuties. C. H. Peachey, K. Dohriner and W. H. Strain, Rochester.—p. 848.
Parathyroid Adenoma and Recurrent Renal Calculi: Report of Case. A. H. Noehren and K. Eckhart, Buffalo.—p. 856.
Infections of Skin Due to *Monilia Albicans*: II. Immunologic, Etiologic and Therapeutic Considerations. G. M. Lewis and Mary E. Hopper, New York.—p. 859.
Unengaged Head in Primiparous Labors in Normal Pelvis at Term. J. I. Kushner, Bronx.—p. 866.
Rheumatic Infection: Is Vitamin C Deficiency a Factor? A. D. Kaiser, Rochester.—p. 868.
Alkaline Cystitis with Phosphatic Concretions: Treated with Sulfanilamide. D. E. Frank, New York.—p. 873.
Tuberculosis of Genito-Urinary Tract. C. G. Bandler and A. H. Milbert, New York.—p. 875.
Tetanus Antitoxin: Serum Reactions Following Prophylactic Injection. H. W. Lyall and P. P. Murdick, Albany.—p. 882.
Foreign Body in Upper Esophagus for Five Months. M. C. Myerson, New York.—p. 885.

Cutaneous Infections Due to *Monilia Albicans*.—Lewis and Hopper obtained cultures from the skin, tongue and feces of 100 dispensary patients suspected of having some type of fungous infection. *Monilia albicans* was present in one or more of these sources in fifty-two patients. Their results with intra-

cutaneous testing with a commercial extract of *Monilia albicans* (oidiomycin) showed 63 per cent of positive reactions in patients in whom a positive culture was obtained from scrapings of the skin. A positive test to oidiomycin was obtained in 58 per cent of the patients who yielded a positive culture from one or more of the examined specimens and in 54 per cent of the patients from whom *Monilia albicans* was not cultured. From the foregoing observations it is concluded that the intracutaneous test with oidiomycin has no practical value in the diagnosis of infections due to *Monilia albicans*. Most patients infected with *Monilia albicans* are overweight. Sometimes a debilitating illness may precede the beginning of the infection. All patients should also be considered potentially diabetic. The organism may at times become more virulent, and this would explain epidemics of localized moniliasis. Such occupations as housewife, baker, waiter and bartender appear to predispose to involvement of the hand, owing to the frequent soaking of the hands and to maceration. The authors treated forty-eight patients by means of the intracutaneous administration of oidiomycin but failed to obtain any cures. There was also no consistent change in the degree of reaction at the test site to oidiomycin before and after treatment. No beneficial therapeutic results were obtained in the localized type of moniliasis from potassium iodide internally. The need for more effective treatment of moniliasis is stressed, particularly for the eradication of any nidus of infection in the intestinal tract.

Vitamin C Deficiency and Rheumatic Infection.—Kaiser studied the vitamin C content of the blood plasma in rheumatic children and compared their values with those of presumably normal children. Experimental and clinical evidence presented by various investigators indicates that vitamin C plays an important part in determining the resistance of the animal organism to certain types of bacterial infections. There is considerable evidence that rheumatic persons have a deficient amount of vitamin C in the urine. This is particularly true in acute rheumatic infections and less so in quiescent rheumatic infection. There is some evidence that the blood of rheumatic persons has a somewhat lower level of vitamin C. This condition is also found in other febrile conditions. There is some evidence that in a rheumatic subject there is an increased need for vitamin C. Clinical studies reviewed dealing with the urinary excretion of vitamin C and the observations made on the vitamin C content of the whole blood do not support the contention that vitamin C deficiency is a significant etiologic factor in rheumatic infection. There is sufficient clinical evidence to stress the importance of regular and adequate ingestion of vitamin C in all individuals suffering from rheumatic disease.

Ohio State Medical Journal, Columbus

34: 497-616 (May) 1938

- Challenge to the Medical Profession. J. C. Sargent, Milwaukee.—p. 513.
Fetal Maldevelopment Recurring in Mother and Four Daughters. D. S. Spreng, Cleveland.—p. 520.
Diagnosis of Acute Alcoholism. M. Hyman, Cincinnati.—p. 521.
Abdominal Pregnancy with Macerated Fetus: Suppuration and Perforation into Urinary Bladder. L. G. Kauffman, R. K. Finley and H. E. King, Dayton.—p. 525.
Routine Treatment of Diabetes Mellitus. H. J. John, Cleveland.—p. 528.
Study of Relation Between Birth Weight and Size of Thymus Shadow in 2,000 Newborn. S. W. Donaldson, Ann Arbor, Mich.—p. 538.
Appendicitis. F. W. James, Lancaster.—p. 542.
Endocrine Diagnosis and Treatment in Women. W. M. Silbernagel and R. S. Fidler, Columbus.—p. 546.
Classification of Tumors. Compiled by L. A. Pomeroy, Cleveland.—p. 551.

34: 617-740 (June) 1938

- Acute Cardiac Emergencies. R. C. Kirk, H. A. Baughn and J. J. Coons, Columbus.—p. 633.
Hypnosis. M. A. Zeligs, Cincinnati.—p. 638.
Chronic Pelvic Inflammatory Disease: Review of 121 Cases. L. R. Markey, Cleveland.—p. 644.
Medical Treatment of Chronic Cholecystitis. O. Berghausen, Cincinnati.—p. 646.
Hemorrhage from a Nose and Throat Standpoint. H. V. Weaver, Canton.—p. 649.
Placenta Accreta. A. G. King, Cincinnati.—p. 652.
Spinal Anesthesia: Report of 350 Cases. W. M. Johnston, Akron.—p. 655.
Prevention of Deafness. F. W. Dixon, Cleveland.—p. 658.
Classification of Tumors. Compiled by L. A. Pomeroy, Cleveland.—p. 661.
Report of Use of Biophotometer and Vitamin A Therapy in Industry. R. C. Wise and O. H. Schettler, Mansfield.—p. 666.
Hypertrophy of Mammary Glands. W. Brehm, Columbus.—p. 673.

Pennsylvania Medical Journal, Harrisburg

41: 663-776 (May) 1938

- Atopic Dermatitis in Infancy and Childhood, with Especial Reference to Treatment. L. W. Hill, Boston.—p. 663.
- Postoperative Circulatory Collapse Accompanied by Acidosis. A. I. Rubenstone, Philadelphia.—p. 673.
- Orthopedic Treatment of the Crippled Child in Rural Pennsylvania. R. L. Simon, Williamsport.—p. 675.
- Splanchnic Anesthesia: In Surgery of the Stomach and Duodenum. C. M. Watson and J. R. Watson, Pittsburgh.—p. 679.
- The Medical Profession and the Social Worker. F. F. Borzell, Philadelphia.—p. 683.
- Predisposing Factors and Preventive Measures in Sinusitis. C. C. Fox, Philadelphia.—p. 687.
- Acute Sinusitis. K. M. Houser, Philadelphia.—p. 690.
- Factors Involved in Retardation of Gastric Emptying After Gastric Operations. I. S. Ravdin, Philadelphia.—p. 695.
- Carcinoma of the Uterus in Nulliparous Woman. F. C. Hammond, Philadelphia.—p. 700.
- Juvenile or Primary Tuberculosis. W. W. Briant Jr., Pittsburgh.—p. 703.
- Pennsylvania's Juvenile Tuberculosis Case-Finding Program. Edith MacBride-Dexter, Harrisburg.—p. 705.
- Alloy Steel Wire (Babcock) Suture. M. H. Jenkins, Norristown, Pa.—p. 707.
- Survey of Malignancies of Genito-Urinary Tract. W. W. Baker, Philadelphia.—p. 709.
- Survey on Intern Training in Obstetrics and Laboratory Work. W. J. Larkin, Scranton.—p. 714.

Philippine Islands Med. Association Journal, Manila

18: 189-266 (April) 1938

- Studies on Vitamin C: I. Determination of Vitamin C (Ascorbic Acid) Content of Philippine Fruits by the Dye Method. I. Concepcion, with technical assistance of Maria Luisa Gargaritano, Manila.—p. 189.
- Removal of Acid-Fastness from Mycobacterium Leprae: Further Observations. J. Manalang, Culin.—p. 205.
- Postoperative Infection in Cataract Extraction. A. R. Ubaldo and G. de Ocampo, Manila.—p. 211.

Public Health Reports, Washington, D. C.

53: 793-830 (May 20) 1938

- Prophylactic Value of Single Dose of Precipitated Pertussis Vaccine: Preliminary Report. W. T. Harrison, J. P. Franklin and J. A. Bell.—p. 793.
- *Incubation Period in Undulant Fever. A. V. Hardy, S. Frant and M. M. Kroll.—p. 796.
- Deratization Activities in Ports and on Ships in American Countries During 1936. From information prepared by the Office International d'Hygiene Publique, with comments by C. L. Williams and B. J. Lloyd.—p. 803.

Incubation Period in Undulant Fever.—Excluding clinically questionable infections and those with diagnoses not confirmed by laboratory examinations, a total of eighty-nine cases of undulant fever infection has been reported to the New York City Department of Health from 1928 to 1937. Hardy and his associates attempt to determine the incubation period in the fifty-two patients who resided in the city. Ten of these are known to have been continuously in the city for several months preceding the onset. Eighteen of the forty-two persons who had been out of town within a possible incubation period had had repeated business or week-end trips, and most of them gave a history of a corresponding intermittent use of raw dairy products. There had been only one trip in each of twenty-four patients, and this trip was preceded and followed by several months of continuous residence in the city. The onset occurred in three patients prior to return, after periods of one, six and eight weeks away from the city, and four persons were out of the city for three months or more. Thus there remain seventeen instances to provide evidence relative to the incubation period. The chief difficulty in computing an incubation period was the uncertainty in the patient's own mind as to the actual date on which his illness began. Maximal and minimal incubation periods have been calculated, placing the exposure dates respectively at the beginning and at the end of the vacation periods. The median of the mean incubation periods computed to the onset of earliest symptoms in this small series is ten weeks and to the onset of severer symptoms thirteen weeks. Considering the minimal period and including the three cases with onset prior to the return to the city, there was a wide and rather even distribution of from one to sixteen weeks, with the median at 6.5 weeks. The minimal interval was less than one month in only one of the seventeen patients, and in only four was it less than two months. Thus the evidence points to a much more prolonged incubation period than has generally been supposed.

Southern Surgeon, Atlanta, Ga.

7: 185-284 (June) 1938

- Modern Trends in the Teaching and Practice of Surgery. F. W. Rankin, Lexington, Ky.—p. 185.
- Intraocular Tumors. A. B. Reese, New York.—p. 194.
- Sulfanilamide. E. G. Ballenger, O. F. Elder, H. P. McDonald and R. C. Coleman Jr., Atlanta, Ga.—p. 204.
- Operative Treatment of Essential Hypertension. G. Crile, Cleveland.—p. 220.
- Efficient Method of Fixation and Immobilization of Ununited Fractures Where Bone Grafts Are Desired. A. E. Gordin, Jackson, Miss.—p. 225.
- Allergy: Its Relation to Surgical Specialties. H. M. Davison, M. I. Lowance and W. R. Crowe, Atlanta, Ga.—p. 233.
- *Deodorization and Management of Fungating Wounds in Malignant Disease. C. F. Geschickter and M. M. Copeland, Baltimore.—p. 244.
- Regional Ileitis: Republication of Case Reported in 1806. A. E. Grimes and F. M. Massie, Lexington, Ky.—p. 251.
- Ulcerating Epithelioma of the Cheek: Case Treated with 500,000 Volt Therapy. H. F. Mershon, Los Angeles.—p. 262.

Deodorization of Fungating Wounds.—Geschickter and Copeland report several instances of sloughing fungating lesions in advanced cases of malignant manifestations with foul odor in which they used an organic chlorine antiseptic in the form of azochloramid as a disinfectant and deodorant. The bactericidal and deodorant action of azochloramid is dependent on its mild and selective oxidizing properties. Exudates on the surface of a fungating tumor contain reduced sulfur compounds, as indicated by the odor. Application of azochloramid to such a lesion selectively oxidizes and deodorizes these compounds. Dressings of azochloramid retain the deodorizing effect for twenty-four hours or longer. Azochloramid is strongly antiseptic and retains its ability to kill micro-organisms in the presence of organic matter. It disinfects therefore such lesions as, owing to the large amount of necrotic material, are otherwise fertile mediums for bacterial growth. Once such a lesion is sterile, the application of the antiseptic prevents invasion by pathogenic organisms.

Surgery, Gynecology and Obstetrics, Chicago

66: 947-1078 (June) 1938

- *Induced Spreading Peritonitis Complicating Acute Perforative Appendicitis. J. O. Bower, J. C. Burns and H. A. Mengle, Philadelphia.—p. 947.
- Acute Appendicitis in Children. J. M. Deaver and A. G. Martin, Philadelphia.—p. 962.
- *Intravenous Calcium Chloride and Its Use for Relief of Visceral Colic: Clinical and Experimental Study. R. S. Lumsden, Hartford, Conn., and F. A. Simeone, Boston.—p. 975.
- Relation of Spasm of the Second Portion of Duodenum to Biliary Colic. J. M. McGowan, Quincy, Mass.; P. A. Knepper, Gilman, Colo.; W. Walters and A. M. Snell, Rochester, Minn.—p. 979.
- Note on Respiration-like Movements of the Human Fetus. W. F. Windle, C. A. Dragstedt, D. E. Murray and R. R. Greene, Chicago.—p. 987.
- Effect of Light on Benzpyrene Cancer in Mice. J. Taussig, Zola K. Cooper and M. G. Seelig, St. Louis.—p. 989.
- Concentration of Serum Sulfate and Blood Urea in Prostatic Hypertrophy Associated with Urinary Obstruction. H. C. Habin, G. J. Thompson and E. G. Wakefield, Rochester, Minn.—p. 994.
- The Management of Bladder Tumors. T. J. Kirwin, New York.—p. 999.
- Surgical Fusion of the Wrist Joint. F. L. Liebolt, New York.—p. 1008.
- Macrocheilia Due to Hyperplasia of Labial Salivary Glands: Operative Correction. H. Conway, New York.—p. 1024.
- Treatment of Low Back Pain Due to Functional Decompression. E. D. W. Hauser, Chicago.—p. 1032.
- Correction of Cystocele and Rectocele in Process of Supravaginal Hysterectomy. L. Drosin, New York.—p. 1038.
- Cholangiographic Demonstration of Remaining Common Duct Stone and Its Nonoperative Management. R. R. Best, Omaha.—p. 1040.
- Retraction Ring Dystocia: Its Cause and Correction. W. T. Pride, Memphis, Tenn.—p. 1047.
- Ambulatory Operative Treatment of Anorectal Pathologic Conditions: 194 Consecutive Operations Performed Under Local Anesthesia of Prolonged Duration. C. V. Burt, New York, and J. G. Rennie, Richmond, Va.—p. 1054.

Peritonitis and Acute Appendicitis.—According to Bower and his associates, peritonitis causes 92 per cent of the deaths of patients admitted to hospitals with acute appendicitis. Of these deaths (from the analysis of 18,687 cases admitted to twenty-eight hospitals in Philadelphia over a period of six years) 81.7 per cent are due to spreading peritonitis, 10.4 per cent to local peritonitis and 7.9 per cent to other causes. Of each hundred patients admitted to hospitals with a diagnosis of acute appendicitis, between fifteen and twenty have a localized abscess. These patients are usually operated on within

twenty-four hours; following operation, however, a number far in excess of what the average surgeon would consider moderate have hyperpyrexia or tachycardia and some of them die. A careful study of the clinical records of these patients shows that those who recovered had a stormy and protracted convalescence. The authors call this group 1—operative-induced spreading peritonitis. A second group of patients, approximately 89 per cent of those admitted to the hospital with spreading peritonitis complicating acute perforative appendicitis, had received one or more than one laxative. The mortality of this group of patients was 115 per cent higher than that of the group that had not received aperients. This is group 2—laxative-induced spreading peritonitis. Deaths in a third group of patients occurred because of a reactivation of the infectious process induced through errors in judgment in the management following operation. This is group 3—post-operative-induced spreading peritonitis. Factors mainly responsible for operative-induced spreading peritonitis are (1) failure to diagnose the localizing process before operation, (2) failure to recognize the localizing process at operation and (3) radical surgery.

Calcium Chloride and Visceral Colic.—Lampson and Simeone investigated the usefulness of calcium chloride in the relief of colic-like pain and in spasm of the bladder. The clinical effects of intravenous calcium chloride and of experimental studies dealing with its mode of action are given. Of fourteen cases with an irritative background symptomatic relief was produced in all but two, in both of which the disease was so extensive that only large doses of morphine afforded relief. In two cases in which there was no irritative element, calcium chloride did not produce any relief. It appears that calcium chloride is effective in the patients with spasmodic pain resulting from a localized irritative state. Since calcium chloride does not produce relaxation of smooth muscle, it is reasonable to assume that it acts by exerting an analgesic effect on the nervous system. Whether it interrupts afferent impulses or exerts its effect centrally is problematic. Whatever its mode of action may be, calcium chloride is a valuable drug for the relief of spasmodic pain. It acts promptly. It is a diagnostic aid in that, when the pain is relieved, the marked voluntary muscular spasm which accompanied the pain is relaxed. This permits more careful examination of the patient without the generalized sensory depression which is brought about by morphine or its derivatives.

Virginia Medical Monthly, Richmond

65: 315-380 (June) 1938

- Some Historical Researches on Mechanical Treatment of Fractures of Long Bones. H. W. Jones, Washington, D. C.—p. 315.
The Pathologist Consults the Clinician. Regena C. Beck, Richmond.—p. 324.
Childhood Tuberculosis: Analysis of 600 Cases Treated with a Survey of Results One to Eleven Years After Discharge. F. B. Stafford, Charlottesville, and V. L. Kelly, Beckley, W. Va.—p. 327.
Twelve Years' Experience with Iodized Oil. D. B. Cole and W. L. Nalls, Richmond.—p. 336.
Fraternal Cooperation. P. St. L. Moncreux, Norfolk.—p. 339.
Prenatal Care. T. J. Williams, University.—p. 342.
Hospitalization by the Group Payment Plan on a Statewide Basis. R. W. Garnett, Danville.—p. 345.
Mental Hygiene Clinics in the Counties: Analysis of 120 Cases Examined in Thirteen Counties During 1936-1937. J. N. Williams, Richmond.—p. 349.
John Peter Mettauer's Notes on Clinical Lectures by Benjamin Rush. W. H. Bell, Hampden-Sydney.—p. 354.
Pneumococcal Meningitis with Recovery: Case. E. C. Toone Jr., Richmond, and U. Higginbotham, Roanoke Rapids, N. C.—p. 359.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

46: 293-340 (June) 1938

- The Sex Hormones. A. Palmer, San Francisco.—p. 293.
Some Surgical Principles in Treatment of Infections of the Hand. S. L. Koch, Chicago.—p. 301.
Postoperative Eventration. H. P. Totten, Los Angeles.—p. 305.
Bile Peritonitis. G. E. Waterworth, Napier, New Zealand.—p. 310.
Spontaneous Rupture of Small Intestine Without Trauma or Pathology: Case. S. Robinson, Santa Barbara, Calif.—p. 312.
Mesenteric Lymphadenitis in Relation to Intestinal Obstruction. W. D. Kirkpatrick, Bellingham, Wash.—p. 317.
Solitary Congenital Pulmonary Cyst: Report of One Case. P. C. Gunby, Seattle.—p. 321.
Low Cervical Cesarean Section: Technical Complications. S. N. Pierce, Los Angeles.—p. 326.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

25: 723-950 (April) 1938

- Evolution and Development of Surgical Instruments. C. J. S. Thompson.—p. 726.
Paralysis of Bladder and Associated Neurologic Sequelae of Spinal Anesthesia (Cauda Equina Syndrome). F. R. Ferguson and K. H. Watkins.—p. 735.
Carcinoma of Small Intestine. W. I. de C. Wheeler.—p. 753.
Encephalocele Associated with Hypertelorism and Cleft Palate. M. C. Oldfield.—p. 757.
Chronic Lymphedema. E. D. Telford and H. T. Simmons.—p. 765.
Dislocations and Fracture Dislocations of Pelvis. R. Watson-Jones.—p. 773.
Pathology of Single Nodule of Thyroid Gland. A. M. Boyd.—p. 782.
Fifty-Three Cases of Vesical Diverticula. R. O. Ward.—p. 790.
Operation Supplemented by Obturator in Treatment of Cleft Palate. R. R. Fitzgerald.—p. 816.
*Clinical Course and Pathology of Burns and Scalds Under Modern Methods of Treatment. W. C. Wilson, Agnes R. Macgregor and C. P. Stewart.—p. 826.
Osteoclastoma of Axis Vertebra. E. H. A. Pask and S. L. Baker.—p. 866.
Cirsoid Aneurysm of the Scalp: Case. F. Rundle.—p. 872.
*Experimental Investigation into Cause of Paralysis Following Spinal Anesthesia. A. D. Macdonald and K. H. Watkins.—p. 879.
Nervous Control of Gastric Secretion: Experimental Study. T. S. Heslop.—p. 884.
Nervous Factor in Traumatic Shock. D. Slome and L. O'Shaughnessy.—p. 900.

Burns and Scalds.—Wilson and his co-workers investigated the causes of the systemic disturbances and of death after burns and scalds under modern methods of treatment. They employ the classification in common use which divides the clinical course into four stages: shock, toxemia, sepsis and healing. From more than 200 cases of burns which came under their care or were specially referred to them for the purposes of the investigation, they selected sixty-five cases in which the injuries, by reason of their extent and severity, seemed likely to prove serious. Fifty-seven of the patients were children less than 12 years of age. In forty-one instances the injuries were scalds, in twenty-four burns by fire. Twenty-three of the sixty-five patients died, and postmortem examination was obtained in twenty. Additional pathologic material was obtained in thirteen other fatal cases. The main principles of treatment were the same in all cases. Morphine or diacetylmorphine was administered and local treatment of the burned area was carried out, as soon as practicable, under nitrous oxide, oxygen and ether anesthesia. All loosened epidermis was removed by gauze soaked in warm physiologic solution of sodium chloride and 20 per cent tannic acid with the addition of 1 per cent gentian violet (in some cases 1:1,000 acriflavine hydrochloride) was applied to the raw surfaces. Two applications of the coagulating solution were made, and the area was dried by a current of hot air after each application. Thereafter the area was exposed to the air under a heating cage. In many cases intravenous infusions were given during the early stages; these and other adjuvant active therapeutic measures were employed. The main cause of differences in the clinical course was individual variation in susceptibility to the effects of injury. The authors have restricted the diagnosis of initial shock to the condition of low blood pressure in cases admitted to the hospital within two hours of injury. Of forty such cases, initial shock was present on admission in only five. As examples of secondary shock are included cases in which shock developed subsequent to admission and also those in which hypotension was present on admission later than two hours after injury. In most instances of secondary shock the condition began during or immediately after local treatment and developed rapidly. The development of secondary shock before local treatment was usually gradual. The well known features of surgical shock always appeared once the main collapse of arterial pressure had begun. The incidence and degree of secondary shock were closely related to the extent to which the cutaneous surface had been injured. In severe shock the circulatory collapse was continuous and progressive and the course would invariably have terminated fatally in from twelve to twenty-four hours after injury but for the active therapeutic measures employed.

Acute toxemia was frequently absent or was extremely mild. Circulatory failure was responsible for some of the most distinctive signs of acute toxemia. Even in the most severe and fulminating acute toxemia there was no constant change in blood concentration. Abnormal constituents in the urine were variable; acetone, albumin and casts were occasional, and bile has been found as early as forty-eight hours. Evidence was against bacterial action as the cause of acute toxemia. Acute toxemia was the sole or main cause of death in thirteen cases of the series and occurred in severe form in four others. The incidence of septic toxemia was intimately related to the depth of the burn. Local signs of bacterial infection of deep burns were rarely present before the fifth day and usually were not obvious until after the seventh day. Even in fatal attacks of septicemia and pyemia hemolytic streptococci did not appear in the blood before the ninth day. Sepsis was the predominant cause of death in ten cases of the series. Necrosis and degeneration of the liver are the most striking and characteristic features of the pathologic changes of burns. Twenty-one hours after injury it appeared as fatty degeneration of the epithelial cells surrounding the efferent veins in the central zone of the hepatic lobules; the fatty degeneration was accompanied by nuclear damage, which was constant and was more severe in proportion to cytoplasmic changes than in most other conditions. At a more advanced stage, from fifty-seven hours onward, the characteristic severe form of damage was found. Eosinophilic cellular infiltration was found in seven fatal cases. The infiltration was found as late as nine days after injury.

Paralysis Following Spinal Anesthesia.—Macdonald and Watkins studied the effect of intrathecal injections of spinal anesthetic solutions and the various constituents of these solutions in 150 cats. The study reveals that: 1. Certain cocaine substitutes, in concentrations commonly employed clinically, though in relatively larger doses, may produce lasting paralysis comparable to lesions of the cauda equina. 2. Improvement in these cases is usually apparent in about six weeks, but cure may be incomplete in six months. 3. The common constituents of the solution other than the local anesthetic drug do not of themselves produce lasting paralysis in the concentrations in which they are normally employed.

British Medical Journal, London

1: 1037-1084 (May 14) 1938

Clinical Problems of Thyrotoxicosis. P. McEwan.—p. 1037.
Lobar Pneumonia; Subphrenic Abscess; Duodenal Fistula: Recovery. A. J. Hall, G. S. Simpson and J. L. A. Grout.—p. 1043.
Analysis of 350 Cases of Abortion. R. G. Cooke.—p. 1045.
Pathogenesis of Bronchiectasis. F. P. L. Lander and N. Davidson.—p. 1047.
Heterolateral Ectopia of the Right Kidney. R. C. Begg.—p. 1049.
Hyperostosis Frontalis Interna (Stewart-Morel's Syndrome). T. de Lechoczky and A. Orbán.—p. 1049.

Thyrotoxicosis.—McEwan discusses the problem of the high and rapidly increasing death rate of thyrotoxicosis. During the year 1936 no fewer than 1,696 deaths were attributed to it in England and Wales. There has been a steady rise for many years. Allied problems such as the role of iodine in treatment, early diagnosis and surgical results are also discussed. The general conclusion is that the increase in the certified death rate is due not to a single cause but to several. There is an apparent increase owing to more accurate diagnosis, so that cases in which it was previously certified that death occurred from heart disease and many other causes are now correctly classified under the heading of thyrotoxicosis. There is a notable surgical mortality. Delay in surgical treatment until the patient is gravely ill is a contributory cause. The use of iodine as a medical treatment may play an important part. There may be an actual increase in the severity of the disease. The foregoing suggests that the certified deaths are more likely to increase than to diminish in the immediate future.

Pathogenesis of Bronchiectasis.—In a previous article Lander and Davidson indicated that mechanical factors played far the most important, if not the sole, part in the production of bronchial dilatation, the role of infection being secondary. They now enlarge on the point of bronchial dilatation within a collapsed lobe during the course of artificial pneumothorax therapy and show that a similar variation in the degree of

bronchial dilatation occurs in ordinary cases of clinical bronchiectasis under normal conditions of respiration. The traditional teaching as to the infective origin of bronchiectasis is still accepted by the majority of clinicians, although the importance of pulmonary collapse as an etiologic factor is receiving increasing recognition. If infection is postulated as a primary cause it may be supposed to act by weakening the bronchial wall and the elastic tissue (so that elasticity is diminished or lost and dilatation follows immediately) or by causing actual ulceration of the bronchial wall, leading to complete destruction, the enlarged cavity being thus lined by fibrous tissue and mucous membrane. The persistence of normally functioning elastic tissue in the bronchi affords a strong argument against the theory that infection of the bronchial wall is the primary cause of bronchiectasis.

Glasgow Medical Journal

11: 221-268 (May) 1938

Renal Tuberculosis and Excretory Bacilluria. W. S. Mack.—p. 221.

Indian Journal of Medical Research, Calcutta

25: 835-992 (April) 1938

Attempts to Cultivate *Mycobacterium Leprae* Muris. Dharmendra and J. Lowe.—p. 835.
Serologic Study of Actinomyces. R. K. Goyal.—p. 843.
Relative Amounts of Protein and Nonprotein Nitrogenous Constituents Occurring in Foodstuffs and Their Significance in Determination of Digestibility Coefficient of Proteins. M. Swaminathan.—p. 847.
Further Studies on Factors Affecting Vitamin A Activity of Animal and Vegetable Products. N. K. De and B. N. Majumdar.—p. 857.
Nitrogen Complex of Indian Foodstuffs: Condiments: Part II. Chillies (*Capsicum Annum*) and Coriander Seeds (*Coriandrum Sativum*). G. Narasimhamurthy.—p. 863.
Availability of Phosphorus from Indian Foodstuffs. K. V. Giri.—p. 869.
Flavine and Vitamin B₆ (Antidermatitis) Content of Indian Foodstuffs. H. E. C. Wilson and G. K. Roy.—p. 879.
"Available" Iron in Indian Foodstuffs. H. Goswami and U. P. Basu.—p. 893.
Observations on Basal Metabolism of Indian Boys in Calcutta. H. E. C. Wilson and N. C. Roy.—p. 901.
Enzyme Method for Estimation of Adrenalin in Suprarenal Glands. Kamala Bhagwat.—p. 911.
Role of Formalin in Estimation of Nitrogen in Body Fluids. P. De and C. C. Chatterjee.—p. 917.
Comparative Study of Glycolysis in Normal and Diabetic Blood. P. De and S. Bhattacharyya.—p. 923.
Glycolysis in Drawn Blood in Twenty-Four Hours. P. De and S. Bhattacharyya.—p. 933.
A New Colorimetric Test for Plasmoquine. B. K. Nandi and B. B. Dikshit.—p. 937.
Hematologic Investigations in South India: Part III. The Mean Red Cell Diameter. G. Sankaran and M. V. Radhakrishna Rao.—p. 951.
Id.: Part IV. Hemoglobin in Normal Pregnancy. M. V. Radhakrishna Rao.—p. 957.
Id.: Part V. Effect of Altitude on Hemoglobin Content. G. Sankaran and K. Rajagopal.—p. 971.

Antidermatitis Factor in Indian Foodstuffs.—With a view to ascertaining whether there is a correlation between any morbid condition and the distribution of flavine and vitamin B₆ in the diet, Wilson and Roy determined by biologic assay the flavine content of some ninety and the vitamin B₆ content of some forty Indian foodstuffs. Among the foodstuffs which are rich in acriflavine hydrochloride are the pulses and legumes, above all grams, and to a certain extent the leafy vegetables, namely, pālang and pun saks. The fruits and vegetables vary considerably but on the whole are distinctly poor sources of the factor. As regards vitamin B₆, cereals are a good source of this factor, while fruits and vegetables, especially the orange and tomato, contain relatively little. Fish falls midway between.

Glycolysis in Normal and Diabetic Blood.—De and Bhattacharyya compared the hourly rate of glycolysis of blood from normal and diabetic persons. Glycolysis takes place in normal blood (0.1 per cent solution of potassium oxalate being used as an anticoagulant) at a rate of from 3.83 to 6.5 mg. (total range from 2 to 11 mg.) an hour per hundred cubic centimeters of blood, giving an average rate of 5.56 mg. an hour. The calculated average velocity of percentile glycolysis is 6.05 mg. In diabetic blood in oxalated samples glycolysis proceeds at a rate of from 4 to 16.6 mg. an hour per hundred cubic centimeters of blood (total range 0 to 36 mg. an hour), giving an average rate of 11.06 mg. an hour. The calculated

average velocity of percentile glycolysis in diabetic blood is found to be 4.61 mg. The average hourly velocity of percentile glycolysis in diabetic blood shows a depression of about 23.8 per cent from normal blood.

Journal of Anatomy, London

72: 323-474 (April) 1938. Partial Index

- Observations on Cervix Uteri and Urethra of Monkeys. O. C. Sandys and S. Zuckerman.—p. 352.
Some Observations on Fetal Vessels of Human Placenta with Account of Corrosion Technic. P. Baesich and C. F. V. Smout.—p. 358.
Development of Supra-Umbilical Portion of Anterior Abdominal Wall. G. M. Wyburn.—p. 365.
Investigation of Cell Size, with Special Reference to the Human Lymphocyte. D. Mainland and B. K. Coady.—p. 374.
Lymphatics of the Skin, with Note on Lymphatic Watershed Areas. G. Forbes.—p. 399.
Cervical Vertebrae of the Australian Native. F. Wood-Jones.—p. 411.
Morphology and Permeability of the Roof of the Fourth Ventricle in Some Mammalian Embryos. H. Cohen and Sarah Davies.—p. 430.
Rare Malformation of the Hand. R. S. Stacey.—p. 456.
The Fate of the Human Premaxilla. F. Wood-Jones.—p. 462.

Journal of Physiology, London

92: 229-360 (April 14) 1938. Partial Index

- Spectrophotometer Investigation into Differences Between Fetal and Maternal Hemoglobin in Man. J. Jonghloed.—p. 229.
Antibodies Organ Specific Against Anterior Body of Pituitary Gland. O. Kestner.—p. 273.
Interpretation of Potential Changes in Spinal Cord. D. H. Barron and B. H. C. Matthews.—p. 276.
Action of Narcotics on Brain Respiration. M. Jowett.—p. 322.
Blood Histamine and Cardiac Activity. C. F. Code, C. L. Evans and R. A. Gregory.—p. 344.
Osmotic Pressure of Aqueous Humor in Normal and Glaucomatous Eye. G. H. Benham, W. S. Duke-Elder and T. H. Hodgson.—p. 355.

Journal of Tropical Medicine and Hygiene, London

41: 141-156 (May 2) 1938

- Preliminary Note on Filariasis in Ceylon, 1936-1937. W. L. P. Dassanayake.—p. 141.
Experimental Pellagra in Monkeys (Hamadryad Bahoons) at the Zoological Gardens, Cairo. A. Clark.—p. 143.
Theoretic Genesis of Q as Observed in the First Three Standard Leads of the Electrocardiogram: Preliminary Report. R. H. Bayley.—p. 144.

41: 157-176 (May 16) 1938

- Outbreak of Plague in Mwanza, February to June 1937. J. M. Campbell.—p. 157.
Maurizio Ascoli's Treatment in the Practice of a Malaria Control Station. A. Milletari.—p. 168.

Lancet, London

1: 1033-1092 (May 7) 1938

- Surgical Treatment of Detachment of Retina. J. C. Marshall.—p. 1033.
Diet and Internal Treatment in Skin Diseases. F. F. Hellier.—p. 1037.
Anorexia Nervosa, with Special Reference to Carbohydrate Metabolism. C. W. Ross.—p. 1041.
Peripheral Neuritis Associated with Pyloric Stenosis and Deficiency of Vitamin B₁. L. P. E. Laurent and H. M. Sinclair.—p. 1045.
*Treatment of Bubo with Sulfanilamide. A. Hutchison.—p. 1047.
Hypertrophic Pyloric Stenosis in One of Uniovular Twins. W. Sheldon.—p. 1048.

Treatment of Bubo with Sulfanilamide.—Hutchison discusses a series of thirty-five consecutive cases of bubo seen in the venereal disease ward of Belvidere Hospital between January 1935 and March 1938. The first twelve patients were treated with local applications alone, the second twelve with dmeleos vaccine and the remaining eleven with sulfanilamide. All the patients had a definite bubo and some a chancre on the penis. None suffered from gonorrhea and all gave a negative Wassermann reaction. In the first group under treatment with heat and antiseptics incision for the removal of pus was required in eight cases and aspiration (four times) in two. In the remaining two the inflammation resolved without breakdown of the glands. The average stay in the hospital was 46.2 days. Pus formed in ten of the twelve cases in the second group, and though they were at first treated by aspiration incision was eventually needed for all of them. The remaining two bubos resolved without the formation of pus. Some of the patients showed a severe reaction to the vaccine, running a high temperature (103 F.) for forty-eight hours and suffering from shock. The average stay in the hospital was 46.7 days. The eleven patients treated with sulfanilamide were given 1 Gm. every four hours. A eusol dressing was applied in these as in the other cases to the sore if one was present. The maximal

amount of sulfanilamide given was 138 Gm. and the minimum 60 Gm. Pus formed in two cases but it was successfully removed by a single aspiration. The remainder resolved without any other intervention. The average stay in the hospital was 15.5 days. Intolerance to sulfanilamide was manifested in only one case with a temperature of 99.6 F. and cyanosis of the tongue. The most striking difference in the three groups of patients is the reduction in the average duration of inpatient treatment for the sulfanilamide treated group.

1: 1093-1146 (May 14) 1938

- Clinical Features of Central Pain. G. Riddoch.—p. 1093.
Histology of Diabetes Induced in Dogs by Injection of Anterior Pituitary Extracts. K. C. Richardson and F. G. Young.—p. 1098.
Glomus Tumors. A. W. Kendall and S. Thomson.—p. 1102.
Subcutaneous Emphysema and Pneumothorax in Bronchial Asthma. R. W. Elliott.—p. 1104.
Radiographic Detection of Myelocoele of the Unborn Fetus. J. F. Brailsford.—p. 1106.
*Cutaneous Application of Follicular Hormone. B. Zondek.—p. 1107.
Vitamin A and Carotinoids in Blood: Deficiencies in Children Suffering from Xerophthalmia. J. H. de Haas and O. Meulemans.—p. 1110.

Cutaneous Application of Estrogen.—Zondek used tinctures of estrogen percutaneously followed by intramuscular injections of progesterone in the treatment of eighteen instances of primary amenorrhea in twelve patients. After the percutaneous treatment with estrogen (from 10,000 to 30,000 mouse units) intramuscular injections of from 8 to 10 rabbit units of progesterone were given daily for five days. Tincture of estrogen appears more effective than that of estradiol benzoate. Rubbing in 5 cc. of an estrogenic solution twice a day appears to be the best method. Bleeding was induced ten times. In three of the eight failures menstruation was later induced by injections of estrogen, so that the percutaneous route seems still to be somewhat inferior to the subcutaneous; but its simplicity makes it agreeable to the patient, especially when treatment has to be continued permanently. In ten cases of secondary amenorrhea (thirteen cycles), varying in duration from one to fourteen years, bleeding was induced seven times. Local treatment with estrogenic tincture is worthy of consideration in arthritis ovaripriva.

Medical Journal of Australia, Sydney

1: 761-796 (April 30) 1938

- Maternal Welfare. A. J. Gibson.—p. 761.
Experiences in Excretion Urography. B. L. W. Clarke.—p. 765.
The Extended Schwartz Operation. E. Gutteridge.—p. 769.
Traumatic Lesions of Sacro-Iliac and Lumbosacral Joints. C. W. B. Littlejohn.—p. 771.
Treatment of Trigeminal Neuralgia. F. J. Clark.—p. 774.
Schizophrenic Patients Treated by Induced Convulsions. R. S. Ellery and D. C. Lear.—p. 779.

1: 797-834 (May 7) 1938

- Treatment of Poliomyelitis. L. Macdonald.—p. 797.
Early Treatment of Poliomyelitis. J. Steigrad.—p. 801.
*Mild Leptospirosis in Southern Queensland: Classification of Infecting Leptospira and Report of Eight Further Cases of the Disease. D. W. Johnson and H. E. Brown.—p. 805.
Effect of Auricular Fibrillation on the Course of Hypertension. L. E. Rothstadt.—p. 813.

Mild Leptospirosis in Queensland.—Johnson and Brown classify the provisionally known Pomona type of Leptospira into its world grouping. In addition, eight further cases of mild leptospirosis, caused by the Pomona type, are reported. Seven of these occurred during an outbreak at Beaudesert in 1937, while the eighth case occurred at Pomona in 1936, although finally diagnosed only in recent months. The Pomona type of Leptospira is not identical with any type or strain kept at the Commonwealth Health Laboratory. Although some cross agglutination occurs with several other types, particularly Raclamat, this relationship is not close enough to be significant. An important representative type of Leptospira not included in the collection kept in the laboratory is Leptospira hebdomadis, the cause of seven day fever in Japan. However, significant relationship has been found by Schliffner between Leptospira hebdomadis and the Pomona type. Therefore, pending a full and final classification of all world types of Leptospira, it is proposed to classify the Pomona type as a separate entity. In the eight cases of leptospirosis reported the main clinical features were fever, prostration, severe headache and generalized muscular pains. Delirium and conjunctival congestion were also noted in several cases. The duration of fever was from three

to eight days. Jaundice was not observed and the mortality was nil. Two patients suffered from pain and swelling in the joints; one patient had a typhus-like rash, and another patient became temporarily blind two weeks after apparent recovery. The epidemiology of the Beaudesert outbreak is considered, and the theory is advanced that the probable precipitating factor was a heavy rainfall about a week before the first patient became ill.

Quarterly Journal of Medicine, Oxford

7: 171-330 (April) 1938

- *Preliminary Report on Value of Stock Vaccine in Treatment of Pneumonia. J. H. Bolton.—p. 171.
- Hypogonadism Associated with Invasion of the Midbrain and Hypothalamus by a Pinal Tumor. R. A. Cleghorn, H. H. Hyland, J. R. F. Mills and E. A. Linell.—p. 183.
- Myelomatosis. Alice Stewart, in collaboration with F. P. Weber.—p. 211.
- *Some Observations on Levulose Tolerance Test. C. P. Stewart, H. Scarborough and J. N. Davidson.—p. 229.
- Tuberculous Splenomegaly, with Miliary Tuberculosis of the Lungs. R. A. Hickling.—p. 263.
- Insulin Antagonism. A. Glen and J. C. Eaton.—p. 271.
- Exophthalmic Ophthalmoplegia. W. R. Brain, with pathologic report on Ocular Muscles and Thyroid Glands by H. M. Turnbull.—p. 293.
- Familial Idiopathic Methemoglobinemia. E. H. Bensley, L. J. Rhea and E. S. Mills.—p. 325.

Stock Vaccine in Treatment of Pneumonia.—Of 168 patients with primary pneumonia, ninety-one were admitted within the first three days of the disease, and of these ninety-one Bolton administered stock vaccine to thirty-two. Vaccine treatment reduced the duration of uncomplicated pneumonia by an average of three days with a standard deviation of the mean of 0.85 day. Recovery within five days of the development of pneumonia was much more likely if vaccine had been administered. Certain cases (in three of six patients the duration of pneumonia was less than three days) responded immediately (twelve hours) to vaccine with crisis and a marked improvement in the clinical condition. There appeared to be some risk in administering large doses of vaccine to patients who, prior to the development of pneumonia, gave a history of chronic cough. Thirteen of the fifty-nine control patients died and six of the thirty-two patients receiving vaccine died.

Levulose Tolerance Test.—Stewart and his collaborators describe a modified form of the levulose tolerance test of hepatic function. After the ingestion of 50 Gm. of levulose, the levulose of the blood is estimated at intervals of half an hour for two hours. Normally (thirty cases) the levulose of the blood reaches a maximum of less than 20 mg. per hundred cubic centimeters within the first hour and falls below 8 mg. at the end of two hours. Abnormal results (a maximum above 20 mg.) were obtained in forty-five of fifty-nine cases suspected, on adequate clinical grounds, of hepatic damage; two cases gave doubtful results. Diabetes does not interfere with the test; arteriosclerosis does. In a few cases, repetition of the test showed a parallelism between the clinical condition and the extent to which the levulose curve was abnormal. The results of 130 levulose tolerance tests are reported.

South African Medical Journal, Cape Town

12: 273-304 (April 23) 1938

- History of Medicine: Medical Establishments and Institutions at the Cape: No. V. P. W. Laidler.—p. 273.
- Town Planning, Rehousing and Slum Clearance. G. H. Gunn.—p. 278.
- Control in Dairies. A. J. Milne.—p. 285.
- Milk and the Public Health. F. W. P. Cluver.—p. 287.
- Strongyloidiasis in Natal. H. S. Osburn.—p. 292.
- Plague: Killed versus Live Organisms for Protective Immunization and for Preparation of Curative Serum. J. H. H. Pirie and E. Grasset.—p. 294.
- Infection of Gallbladder by *Schistosoma Haematobium*. H. B. Stein.—p. 297.
- Myelomatosis with Visceral Metastases in a Native of Southern Rhodesia. V. Carlisle.—p. 298.
- A New Chemotherapeutic Agent in Gonorrhea: Preliminary Report. C. K. O'Malley.—p. 301.

12: 305-344 (May 14) 1938

- Pituitary Hormones and Their Therapeutic Application. P. W. J. Keet.—p. 311.
- Lament for the Body Medical. L. S. Williams.—p. 315.
- Tonsils—In or Out? F. A. Lomax.—p. 317.
- Impressions of American Medicine. H. L. Heimann.—p. 319.
- The Scope of Radiotherapy. H. H. Navid.—p. 321.
- Notes on Use of Typhoid Endotoxoid Vaccine. R. Meyerstein.—p. 324.

Gynécologie et Obstétrique, Paris

37: 321-424 (May) 1938

- *Systematic Application of Posterior Pituitary in Course of Delivery. J. Snoeck and J. Bernard.—p. 323.
- Treatment of Eclampsia. J.-L. Wodon.—p. 336.
- Consideration of Practical Value of Quantitative Determination of Gonadotropic Substance. R. Bourg.—p. 344.
- Posterior Hypophysis and Preeclampsia. G. Lambert.—p. 359.
- Experimental and Clinical Study of Uterine Hypertonia in Course of Labor. R. De Guchteneere and P. La Haye.—p. 367.
- Clinical and Therapeutic Consideration of Several Cases of Glandular Hypertrophy of Endometrium. M. Rocmans.—p. 402.

Posterior Pituitary in Delivery.—Snoeck and Bernard employed in a new series of 1,000 cases three Voegtlin units of a posterior pituitary extract that contains only the oxytocic fraction of the posterior hypophyseal principle, with the exclusion of the hypertensive principle, and is of a type that can be administered to all parturient women, including those with albuminuria and hypertension. The extract is administered by intramuscular injection after the expulsion of the fetus, even before the section of the cord. The authors point out that this method is not new and cite others who have employed it. Summarizing their observations, they emphasize the following: The pain of the delivery did not appear more intense than when the delivery was accomplished without the employment of medicaments. In the rare cases of manual inspection and of manual detachment of the placenta, they did not observe a spasm of the cervix or a contraction of Bandl's ring, which would make these interventions difficult. The persistence of the action of the oxytocic preparation effects a good contraction of the uterus when the placenta has descended into the lower segment and the vagina; then it effects a notable reduction of the three dimensions of the uterine body and makes the organ firm. It is the difference in the volume and the consistency, which at this point facilitate the diagnosis of the complete detachment of the placenta. This phenomenon, which the authors had the opportunity to observe frequently, makes it possible to avoid to a certain extent the untimely manipulations on the uterine body, which so frequently are the origin of partial placental retention. In one case of placental retention the authors had to resort to manual detachment after two hours and twenty minutes of waiting. This case suggests the presence of pathologic uterine adhesions between the decidua and the subjacent uterine musculature. Finally, the time of the delivery is on the average reduced after the injection of the oxytocic preparation. On the basis of the results obtained with the method, the authors recommend its systematic employment.

Journal de Médecine de Lyon

19: 331-390 (June 5) 1938

- Azotemia in Experimental Diphtheritic Intoxication of Guinea Pigs. J. Chailier, M. Jeune and L. Revol.—p. 331.
- New Chemotherapy of Gonorrhea. G. Chailier.—p. 361.
- *Treatment of Acute Phlebitis of Lower Extremities by Early Compression. A. Pratsicas and C. Théohari.—p. 367.

Compression in Acute Phlebitis.—Pratsicas and Théohari point out that the classic treatment of acute phlebitis of the lower extremities consists in prolonged immobilization, until the spontaneous organization of the thrombus. This prolonged immobilization has two disadvantages: 1. It does not protect against the danger of embolism which develops in a high percentage of cases (with a mortality of 16 per cent) and it requires considerable time, from two and one-half to three months being the minimum for ordinary cases. 2. Quite often there remain serious sequelae, such as edema, cyanosis, clubfoot, partial ankylosis and muscular atrophy, which impair the function of the affected member and which sometimes are permanent. In 1910 Fischer began to treat acute phlebitis by early compression, employing the zinc paste bandage of Unna. The authors report seventeen cases of acute phlebitis which they treated by early compression. They prepare the paste for the bandage according to the following formula: 150 Gm. of zinc oxide, 150 Gm. of gelatin, 250 Gm. of glycerin, 20 Gm. of calcium hydroxide and a quantity of distilled water to make 1,000 Gm. Before the paste bandage is applied, the limb is shaved and is placed in an elevated, slanting position at least twenty minutes previous to the application. This elevation aims at a reduction of the edema. Strips of gauze (5 meters in length and 8 cm. in width) are saturated with the mixture previously described and are wound

around the limb. The extremity must remain in extension for at least an hour, until the paste begins to dry; after that it is placed on cushions in a slanting position. In contradistinction to other authors, who let their patients get up and walk around, Pratsicas and Théohari keep their patients in bed for from ten to twelve days, with the extremity in the elevated, slanting position. At the end of this period the paste bandage is taken off and Velpéau's bandage is put on, which maintains a certain degree of compression. In all cases cure was obtained without embolism in about twenty days. There were no notable sequels and the anatomic and functional restitution of the limb was almost complete. The early compression acts in the following manner: In approximating the venous wall of the thrombus, it favors the rapid organization of the thrombus. Thus the danger of embolism is counteracted, the edema disappears rapidly and in twelve hours from the moment of the removal of the compressive bandage the patient can make active movements and can walk without any fear of embolism. The slanting position greatly favors the organization of the thrombus. On the basis of their own experiences and of those reported in the literature, the authors arrive at the conclusion that the therapeutic results and the functional and economic advantages (shortening of treatment from several months to about twenty days) of the early compression represent a real progress over the former treatment. They regard it as the method of choice in the therapy of phlebitis of the lower extremities.

Schweizerische medizinische Wochenschrift, Basel

68: 665-684 (June 4) 1938

Meningitis of Rare Etiology (*Pasteurella Meningitis*). W. Hadorn.—p. 665.

New Case of Cerebrospinal Meningitis with *Bacillus Bipolaris Septicus*: Review of Case Published Under Term of Human Pasteurellosis. R. Regamey.—p. 666.

*Chemotherapy of Acute Anterior Poliomyelitis. C. Contat.—p. 669.
Rose Bengal Test and Other Tests of Hepatic Insufficiency. M. Naville.—p. 674.

Ileitis Ulcerosa Stenosans or Regional Phlegmon of Intestinal Wall with Localization in Ileum. S. Ostrowski.—p. 677.

Chemotherapy of Poliomyelitis.—Contat reports his experiences with a new treatment in the epidemic of poliomyelitis in Switzerland from August to December 1937. The epidemic must be classed with the most grave ever observed in Switzerland. In from 40 to 45 per cent of the cases there were serious forms of paralysis, and about one half of these had a fatal outcome. The author treated thirty-five cases of poliomyelitis with potassium chlorate orally. In the first nineteen of these he used potassium chlorate together with small quantities of serum, but in the other sixteen cases he administered only potassium chlorate. He believes that in the patients in whom potassium chlorate was used, with or without serum, the evolution of the poliomyelitis deviated clearly from that which otherwise could be observed during this epidemic. He describes several cases in which he employed potassium chlorate. Then he discusses the pharmacotoxicologic aspects and the probable mode of action. In describing the therapeutic application of potassium chlorate, he stresses that it should be given as early as possible. The doses are adjusted to the age and weight of the patient as well as to the severity of the symptoms. A tabular report indicates that in the author's cases the quantity of potassium chlorate varied between 0.25 Gm. for infants and 6 Gm. for adults. The chlorate was usually combined with a syrup, which was given in quantities of from 5 to 15 cc. In addition each patient received four times each day nasal instillations of five drops of a 2 per cent solution of potassium chlorate. The duration of the treatment varies but it should be continued for from thirty-six to forty-eight hours after the temperature has dropped below 37 C. (98.6 F.). On the basis of his observation the author reaches the following conclusions: 1. Potassium chlorate, administered alone, at the right time and in sufficient quantities, seems to exert a curative action of the first order in cases of poliomyelitis. 2. Potassium chlorate can be administered without great danger in the required large quantities if it is given in sufficiently fractionated doses. 3. There exists a reasonable relation between the much disputed dangers of potassium chlorate and the unquestionable danger of poliomyelitis. 4. The cases in which the potassium chlorate was employed presented a great similarity of evolution; it seems that the disease is

deprived to a greater or lesser extent of its extremely grave characters. 5. The potassium chlorate is valuable also in the prophylactic treatment. Having administered it as a successful preventive measure to eighty persons who came in contact with poliomyelitic patients, the author recommends it as a prophylactic treatment for all persons who have had contact with a person who has, or is seriously suspected of having, poliomyelitis. In giving the prophylactic treatment, he administers approximately two thirds of the therapeutic dose. In adults the chlorate drink can be replaced by the chlorate tablets of 0.1 Gm. each. Nasal instillations of a 2 per cent solution of the medicament should not be neglected. Application by gargling must be regarded as insufficient. The author thinks that such measures will considerably diminish the new cases and will restrict the necessity of hospitalization to the cases in which paralytic symptoms develop.

Archivio per le Scienze Mediche, Turin

65: 803-982 (May) 1938

Investigations on Physicochemicals of Respiration in Heart Diseases. E. Poli.—p. 803.

*Studies on Metabolism of Purines: Alterations of Liver in Gout. A. Robecchi and M. Pescarmona.—p. 875.

Relation of Leukemia and Sarcomatous Neoplasms: Pathogenesis of Avian Leukemia and Essays for Causing Cytotropism of Leukemic Virus. E. Storti and A. Zaietta.—p. 897.

Entity of Reticuloecytic Crisis from Liver Treatment in Pernicious Anemia in Relation to Values of Erythrocytes from Bone Marrow and Blood Before Treatment. F. Penati and G. Saita.—p. 941.

Postcavitary Bronchogenic Diffusion of Pulmonary Tuberculosis. O. Maestri.—p. 973.

Alterations of Liver in Gout.—Robecchi and Pescarmona observed the behavior of the liver in a group of thirty-three patients who had gout. They found that moderate disorders of the liver are frequent in gout. The function of the liver, determined by the tolerance tests to proteins and carbohydrates and by the elimination of bromsulphalein, was slightly altered in thirteen of thirty-three cases. The author found that there is no relation between the condition of the liver and the alterations of the metabolism of purines which exist in gout and the severity of the disease. The alterations of the metabolism of purines, which are frequent in acute diseases of the liver without gout, originate in collateral effects of the liver disease. The alterations of the liver in gout are either independent of gout or secondary to it. They have no role in the pathogenesis.

Ginecologia, Turin

4: 267-332 (May) 1938

Gallbladder and Pregnancy: Modifications in Time of Emptying. F. Spirito.—p. 267.

Modifications of Ovaries of Guinea Pigs Receiving Avitaminosis Diets. S. Zocchi.—p. 275.

*Bleeding Breasts: Cases. M. Einaudi.—p. 289.

Syphilis in Relation to Abortion and Premature Delivery: Clinical and Statistical Study. G. Vurebio.—p. 312.

Kosjakoff's Reaction in Diagnosis of Pregnancy. E. Gyarmati.—p. 322.

Bleeding Breasts.—According to Einaudi, the most frequent cause of bleeding breast is the presence of inflammation, dystrophy or neoplasms. Hemorrhages which are vicarious or supplemental to menstruation are not included in the term of bleeding breast. In the latter condition, hemorrhage is due to rupture of some local vessels in the presence of special conditions of the local tissues, which is eliminated through the galactophoric canals. The seat of the lesion is of importance because of the fact that the intracanalicular lesions bleed more frequently than the extracanalicular ones. Bleeding breast is rare. The author found six cases in a group of 250 patients with various diseases of the breast. Five patients were women ranging in age from 43 to 60. In the author's cases there was no relation between bleeding breast and menstruation. One of the patients was a man aged 20. The microscopic study of the removed tissues showed inflammatory conditions of the breast in three cases, coexisting with cystic adenoma in one and cystic fibrosis in two cases, and cancer in three cases. The types of cancer were papilliferous adenocarcinoma in two cases and intracanalicular carcinoma in one case. The treatment was determined by the characteristics of the nodules, or the type of induration of the breast and by the extension of the pathologic process. The breast was amputated and the axillary cavity was emptied in the three cases of cancer and in a case of diffuse

papillomatous cystic fibrosis and without emptying of the axillary cavity in the case of cystic fibrosis in the young man. In a case of benign hemorrhagic cystic adenoma the tumor was removed. Recurrences did not take place. According to the author, the presence of hard nodules or indurations of the bleeding breast indicates a biopsy or a surgical intervention, depending on the characteristics and extension of the indurations. Frequent observations of the breast are of importance. The absence of indurations in the bleeding, painful breasts of women more than 40 years old indicates total amputation of the breast and careful examination of the removed structure for the direction of further treatment.

Tuberculosis, Rome

30: 127-162 (April) 1938

*Tryptophan Test in Tuberculous Meningitis. G. Guglielmin.—p. 127.

Tryptophan Test in Tuberculous Meningitis.—Guglielmin advises the systematic use of the tryptophan test in the cerebrospinal fluid for early diagnosis of tuberculous meningitis and for differential diagnosis of tuberculous meningitis from other types of meningitis and diseases of the brain. The technique is simple: In a test tube mix 3 cc. of cerebrospinal fluid, 15 cc. of concentrated hydrochloric acid and 2 or 3 drops of a 2 per cent solution of formaldehyde for five minutes. A few cubic centimeters of a 0.06 per cent solution of sodium nitrite is stratified over the mixture containing the cerebrospinal fluid. The appearance of a violet ring at the point of contact between the two layers in the test tube within two or three minutes indicates the presence of tryptophan in the cerebrospinal fluid which shows tuberculous meningitis. A strongly positive reaction (+++) shows by the diffusion of the violet color in all the test tubes, so that the amount of tryptophan in the cerebrospinal fluid can be determined by a colorimetric reaction. The test is made by daylight. The author performed the test in twenty-nine specimens of cerebrospinal fluid. It gave positive results in eight cases of tuberculous meningitis and negative in nontuberculous meningeal reactions, abscess and tumors of the brain and neurosyphilis. The reaction was pseudopositive in one case of suppurative meningitis and in two cases of xanthochromia (late after hemorrhage). The macroscopic characters of the cerebrospinal fluid in the latter conditions, however, rule out the diagnosis of tuberculous meningitis. The author says that the tryptophan test is simple and reliable.

Archivos Argentinos de Pediatría, Buenos Aires

9: 329-456 (April) 1938. Partial Index

Antirheumatic Crusade in Pediatric Institution. M. Acuña and A. Puglisi.—p. 329.

*Feeding of Premature Newly Born Infants. J. J. Murlagh.—p. 337.
Symptoms of Fever from Urinary Infection in Children. J. Damiano-vich.—p. 363.

Monstrous Obesity in Infant: Case. S. Schere and J. C. Pellerano.—p. 365.

Feeding of Premature Infants.—Murlagh studied the results of different types of feeding in 314 premature infants who were kept in incubators at a pediatric institution. In all cases the body weight of the infants was less than 2,500 Gm. In two cases the infants weighed less than 1,500 Gm. In the group of sixty-three premature infants who were fed with mother's milk before or shortly after the tenth day of life, only one died. In the group of 145 who were fed boiled human milk from a bottle before or shortly after the tenth day, 106 died. In the group of 180 who were given a mixed feeding from before the thirtieth day of life on, forty-three died. The rest of the infants were given slight variations of these three diets. The author concludes that breast feeding is the best for premature infants. It would be advisable to install incubators in the home so that the infant might be near the mother. The rate of morbidity and mortality is lower in infants who are fed a mixed diet from before the thirtieth day of life than in those fed with boiled natural milk. "Babccure," especially that prepared with carbohydrates or with a mixture of casein and calcium oxide, gives the best results as a complementary food. It is advisable to give premature infants with intestinal distention calcium caseinate in addition to natural feeding. Overfeeding should be avoided, as it may harm the infant's health. As a rule the infants do not gain in weight until after the first month.

Archiv für Gynäkologie, Berlin

167: 1-252 (May 12) 1938. Partial Index

*Changes in Serum Protein Bodies in Normal and Toxic Pregnancy and Their Clinical Significance. H. Siedentopf.—p. 1.

Critical Evaluation of Question of Best Treatment for Placenta Praevia. Liepelt.—p. 52.

New Method for Determination of Size of Fetal Head from Roentgenogram. F. A. Wahl.—p. 155.

Function of Uterus in Action of Ovarian Hormones on Thyroid. P. Grumbrecht and A. Loeser.—p. 199.

Ossifications in Os Caputatum and Os Hamatum in the Newborn, a Sure Sign of Hypermaturity. K. Klöppner.—p. 223.

Minute Volume of Heart During Rest in Pregnant Women. H. R. Schmidt-Elmendorff, G. Effkemann and W. Borgard.—p. 230.

Serum Protein Bodies During Pregnancy.—The investigations described in this article were carried out by Siedentopf (1) in order to find as reliable a method as possible to verify the contradictory reports about the extent of the deviations in the serum protein bodies during pregnancy and (2) to determine whether the detected changes can be utilized for clinical purposes, especially for the diagnosis and prognosis of pregnancy toxemias. Since the direct gravimetric determination of the serum protein bodies is generally conceded to be the most reliable method, the author employed it. He detected during normal pregnancy a decrease in the total protein content and in the albumins per volume unit of serum, but the globulins remained the same per volume unit. This results in a deviation of the albumin-globulin ratio in the direction of the globulins; that is, the albumin/globulin quotient is lowered. During pregnancy toxemias there was regularly a further decrease in the total proteins and the albumins per volume unit, but the globulins either remained the same or they decreased only slightly; that is, there was a further decrease in the albumin/globulin quotient. On the basis of these results and of the observations made by others, particularly on the changes in the total quantity of blood, the author developed the following theory as regards the protein bodies during normal pregnancy and during pregnancy toxemias: The maternal organism reacts to the pregnancy with an increased production of globulins. The significance of this increase seems to lie in the fact that all antibodies and certain fermentations are contained exclusively in the globulin fraction. Moreover, it is probable that the increase in the total quantity of globulin is important also on account of the peculiar chemical characteristics. The total quantity of albumins remains on the whole unchanged. The fact that the total quantity of the blood increases by about 15 per cent during pregnancy results in a dilution of the protein content. This dilution, together with the changes in the different protein bodies, has the effect that the total quantity of protein is reduced per unit of volume and that the albumins decrease correspondingly but that the globulins remain the same. The author considers it important that, in addition to the formerly customary distinction between the relative and absolute changes, the changes in the total quantity should be strictly differentiated from these changes per unit of volume. During the toxemias of pregnancy, the globulins increase further. At the same time there is retention of water, which results in further dilution of the protein bodies. In the unit volume, this is evidenced in the further decrease in the total protein content and in the albumins but in a constant globulin content. In order to determine whether the detected changes could be utilized for diagnostic and prognostic purposes in the disturbances of pregnancy, the author investigated whether the nephelometric curve and the Takata reaction could be used. He found that the nephelometric serum curve undergoes characteristic changes during pregnancy. In pregnancy toxemias, particularly, the form of the nephelometric curves is so typical and has such a degree of parallelism with the disease process that it can be employed for diagnostic and prognostic purposes. In his experiments with the graded Takata reaction, the author observed a strong deviation toward the positive side; that is, a greatly increased flocculation tendency. Regarding the diagnostic and prognostic value of the Takata reaction, the author says that it is not as valuable for the clinical evaluation of the pregnancy toxemias as is the examination of the nephelometric curve but that it is nevertheless of some value for the differential diagnosis and the prognosis.

Klinische Wochenschrift, Berlin

17: 721-760 (May 21) 1938. Partial Index

- Resistance and Allergy Against Tuberculosis. W. Seiffert.—p. 721.
Practical Guiding Rules for Determining and Estimating Balance of Vitamin C in Human Subjects. G. Gaetgens.—p. 724.
*Influence of Posture on Composition of Urine in Healthy Children and in Those with Cardiac Insufficiency or with Obesity. H. Hungerland.—p. 730.
Anoxemia of Cardiac Muscle in Paroxysmal Tachycardia and in Respiratory Insufficiency. K. Voit and G. Landes.—p. 733.
Acid Covering of Skin and Bacterial Defense. A. Marchionini, R. Schmidt and Josefa Kiefer.—p. 736.
Elimination of Flavones in Urine. L. Armentano, E. B. Hatz and S. Rusznayk.—p. 739.

Effect of Posture on Composition of Urine.—Hungerland describes experiments which he carried out in order to determine to what extent changes in the body posture influence the composition of the urine and especially whether normal children, those with circulatory insufficiency and those with severe obesity show differences in the formation of urine during the reclining and sitting postures. The tests were made on girls and boys between the ages of 6 and 14 years. Each experiment was begun at 7 a. m., after twelve hours had elapsed since the last intake of food and fluid. The child had to evacuate the bladder at 7 o'clock and after that at hourly or longer intervals. Each experiment lasted five hours. During the first test the child remained quiet in bed; during the second one it sat on a chair so that the feet rested on the ground and the knees formed an angle of 90 degrees. After micturition the urine was placed in the measuring cylinder and immediately layered with toluene. The ammonium content, titration acidity (according to Hendersen), hydrogen ion concentration and the total bases were determined at once. Chlorides and phosphates were determined later. The series of tests numbered thirty-six in all. Summarizing the observations the author says: 1. In the sitting posture the children with few exceptions eliminate less water, total bases, phosphates and chlorides than they do when reclining. The difference in the elimination is usually greater in the children with cardiac insufficiency than in the normal children. 2. Normal children eliminate during five hours in the sitting posture more ammonia and acid per kilogram of body weight than they do when reclining. The urine which they eliminate while in the reclining posture is only slightly acid or even alkaline, whereas that eliminated during the sitting posture has considerable acidity. 3. Children with cardiac insufficiency, on the other hand, when reclining for five hours, show a greater ammonium and acid elimination per kilogram of body weight than if they are in the sitting posture. Their urine has a comparatively high acidity whether they are sitting or lying down; the hydrogen ion concentration is the same for the two urines. 4. The acid and ammonium eliminations per kilogram of body weight is greater in children with cardiac insufficiency than in normal children. During the sitting posture the elimination of both is approximately the same in the two types of children. 5. Children with a high degree of adiposity respond to the aforementioned tests about like children with cardiac insufficiency. The author thinks that the results can be explained by a disturbance in the capillarization of the tissues in the sick children; the disturbance is intensified by sitting.

17: 761-792 (May 28) 1938. Partial Index

- Modification of Carbohydrate Metabolism of Liver and Liver Extract. A. Wiedmann.—p. 766.
Changes of Sugar Content of Cerebrospinal Fluid During Insulin Shock Therapy of Schizophrenia. K. T. Dussik.—p. 769.
*Value of Chemotherapy in Coccic Infections in Surgical Diseases. J. Frankl.—p. 775.
Symptomatology and Course of A Hypervitaminosis in Rats as Result of Enteral, Subcutaneous and Percutaneous Administration of Vitamin A Concentrates. W. Weslaw, B. Wrónski, A. Wróblewski and B. Wróblewski.—p. 777.
Hydrochloric Acid-Collargol Reaction in Cerebrospinal Fluid. C. Riebeling.—p. 783.

Chemotherapy in Coccic Infections.—Frankl reports results that were obtained with three types of sulfanilamide preparations in the treatment of coccic infections. The observations were made in more than 100 cases. The sulfanilamide preparations were used in such conditions as furuncles, carbuncles, abscesses, phlegmons, mastitis, hidradenitis, tuberculous empyemas and bone fistulas, chronic and acute osteomyelitis, erysipelas and postoperative infections. The tuberculous and

osteomyelitic processes did not respond to the sulfanilamide treatment but the other processes did. The parenterally administered sulfanilamide preparation was the least effective of the three. The author thinks that this is due to the fact that, in parenteral administration, smaller amounts are given and the elimination is more rapid than in the oral medication. Of the two orally administered sulfanilamide preparations, prontosil rubrum proved more effective than prontosil album. Streptococcic infections responded especially well to the prontosil rubrum. In the staphylococcic infections the difference in the efficacy of the two preparations was not so pronounced. The more rapid therapeutic action of prontosil rubrum was noticeable especially in the treatment of furuncles, carbuncles, phlegmons and so on. Some cases of phlegmon and furuncle which did not react to the parenterally administered sulfanilamide preparation or to the prontosil album were cured quickly by prontosil rubrum. The efficacy of the sulfanilamide is to a certain extent dependent on the dosage. Neither the extremely small nor the extremely large doses produce satisfactory results.

Zeitschrift für klinische Medizin, Berlin

134: 129-384 (May 21) 1938. Partial Index

- Clinical and Experimental Observations on Modification of Coagulation Time of Blood by Histidine, Ascorbic Acid, Calcium and Their Combination. H. Kohl.—p. 129.
*Connection Between Manifestation of Diabetes and Season of Year. R. Pannhorst and Anneliese Rieger.—p. 154.
Syndrome of Adrenal Medulla: Chromaffin Tumors. R. Hegglin and H. Nabholz.—p. 161.
*Physiologic Fluctuations in Renal Function. H. Popper and J. Brod.—p. 196.
Disturbances in Regulation of Carbohydrate Metabolism in Essential Hypertension. A. Schweers.—p. 239.
Action of Vitamins on Morphology of Blood: Influence of Vitamin C on White Blood Picture. A. H. Müller.—p. 264.
Investigations on Surface Tension in Normal and Pathologic Serum. C. J. Keller and O. Künzel.—p. 287.

Seasonal Manifestations of Diabetes.—Two observations induced Pannhorst and Rieger to investigate a possible connection between the development of diabetes and the season of the year. The first one was the frequent exacerbation in the metabolic condition of diabetic patients during the latter half of the winter and during spring, and the second one was the occasional statement of diabetic patients that they felt least well and capable during fall. However, in view of the multiplicity of factors that influence the carbohydrate metabolism of a patient who already has diabetes mellitus it would be difficult to ascertain whether the season of the year exerts a definite influence. For this reason the authors decided to investigate whether a connection exists between the first manifestation of diabetes mellitus and the season. They investigated in this respect a material of 719 diabetic patients; 392 were men and 327 were women. The graphic recording of the first appearance of the diabetes results in two entirely different curves for the male and female patients. Whereas the curve for the women shows only a slight rise in the fall and otherwise shows an even course, the curve for the men shows a slight decrease in the fall and a great increase during the winter. It occurred to the authors that perhaps the different age groups might participate in different degrees in the composition of the curve. The authors analyzed their material according to four different age groups and found that their assumption was justified. After describing their observations on the relation between age and the seasonal fluctuations in male and female patients they emphasize that, in spite of these seasonal correlations, diabetes mellitus cannot be regarded as a seasonal disorder. They think, however, that periodic climatic processes act on the carbohydrate metabolism indirectly by way of the sympathetic nervous system. The authors call attention also to connections between diabetes mellitus and the endocrine glands.

Physiologic Fluctuations in Renal Function.—Popper and Brod report studies on the renal function. They determined the filtration and resorption according to the method of Rehberg but without having recourse to a creatinine tolerance test. They show that the fluctuations of two different apparatus of the kidney may increase the diuresis: on the one hand there is the increase in the filtration activity, which, in addition to being dependent on the condition of the glomerular coils, is influenced also by many external factors (blood pressure, com-

position of blood and so on); on the other hand there is the decrease in the resorptive activity, which is influenced by the condition of certain venous plexuses. These two work partly together and partly against each other. They are largely independent. The authors compare the filtrative activity with the head for fine focusing (on a microscope), the retroresorptive action with the head for coarse focusing. In comparing the diurnal and nocturnal filtration and resorption of the kidneys, without giving attention to external influences, the authors found that the fluctuations are so irregular that a uniform interpretation is impossible. Intake of foods and fluids in moderate quantities produces in healthy subjects an increase in filtration and a decrease in resorption, the result of which is an increase in diuresis. If large quantities of fluids are taken, the kidney behaves as in the water test; that is, the diuresis is greater and the filtration and resorption are inhibited. In patients with cardiac and renal disorders the intake, even of small amounts of fluid or food, is followed by a decrease in filtration, whereas in patients with hepatic disease irregular conditions exist. The nycturia of patients with heart disease is caused by an increase in filtration and a decrease in resorption, whereas that of patients with renal disease is caused only by a decrease in the retroresorption, possibly even with a simultaneous decrease in the filtration. In the artificial nycturia in healthy persons, following excessive intake of food in the evening both apparatus are involved. Excretion effects in healthy persons an increase in filtration. However, since the retroresorption increases likewise, the diuretic effect is different. In patients with cardiac and renal disturbances, on the other hand, the filtration decreases. The renal function is dependent on endogenic and exogenic factors. Of the exogenic ones, intake of food and fluid and exertion wield the greatest influence. The function of the kidney is subject much less to its own inherent laws and limitations than to extrarenal factors. The authors conclude that these investigations demonstrate the superiority of the determination of the creatinine in the plasma over the determination of the filtration for the purposes of practical diagnosis, and they furnish a theoretic support for the rest treatment and dietetic measures in renal patients.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

82: 2373-2512 (May 14) 1938. Partial Index

- Acute Coma. A. J. Boekelman.—p. 2379.
Types of Pneumococci in Pneumococcal Disorders of Adults in the Netherlands. J. Mulder.—p. 2385.
Studies on Pneumococci in Children. J. Van Lookeren Campagne.—p. 2393.
*Investigations on Occurrence of Tuberculosis in Institutes for Patients with Mental Disorders. B. C. Hamer and J. M. Wentzel.—p. 2398.
Contributions to Aspects of Phosphatide Lipoidosis (Niemann-Pick Disease). P. H. Teunissen and A. Den Ouden.—p. 2406.
Healing of Medial Fracture of Neck of Femur. A. H. Smoek.—p. 2410.
Treatment of Measles with Convalescent Serum. J. H. Wagenaar.—p. 2426.

Tuberculosis in Patients with Mental Defects.—Hamer

and Wentzel mention older statistical investigations which indicate that in the Netherlands the mortality from tuberculosis was from five to seven times as great in the institutes for mental defectives as in the corresponding age groups of the population outside these institutes. In the foreign literature of this period, the same or even higher figures are given for the incidence of tuberculosis among mental defectives. In later years, measures were taken to reduce this high incidence of tuberculosis among the patients in the institutes for mental diseases. The authors review some recent investigations on the incidence of tuberculosis in mental defectives and then report the results of their own investigations on the presence of pulmonary tuberculosis in 687 inmates of an institution for mental defectives. They detected a more or less active pulmonary process in 3.1 per cent of the cases (all classes included). In the patient having third class accommodations, the incidence of tuberculosis was 3.6 per cent. The authors say that the percentage detected in their institution is about like that in others (from 3 to 5 per cent). Roentgenographic examination disclosed an active tuberculous process in eight patients in whom such a process was not suspected.

Norsk Magasin for Lægevidenskapen, Oslo

99: 457-560 (May) 1938

- Can Radesyke Be Partly Explained as: Hypovitaminosis? F. Grøn.—p. 457.
Paradoxical Air Embolism: Case. K. Thomassen.—p. 470.
Occurrence of Blood in Air Passages After Tonsillectomy. T. Leegaard.—p. 475.
Some Investigations on Gastric Acidity Determined by Fractionated Withdrawal of Test Meal According to Ryle. B. Frøheim.—p. 487.
*Remarks on Tumors in Posterior Cranial Cavity. A. Torkildsen.—p. 495.
Psoriasis Bacillus, Corynebacterium. E. Aaser.—p. 512.

Tumors in Posterior Cranial Cavity.—Torkildsen analyzes thirty-four cases (twenty-three gliomas, seven tuberculomas, one meningioma, one cholesteatoma and two tumors of unknown nature established only by ventriculography) in nineteen men and fifteen women, of whom eighteen were less than 20 years old and only six more than 40. The average duration of the disease was eighteen months. Of his entire material of 154 cases of verified tumors of the brain (*Norsk mag. f. Lægevidensk.* 99:137 [Feb.], 310 [March] 1938) eight cases (about 5 per cent) were tuberculomas; the eighth case was located in the pons. The most frequent symptom was headache, which occurred in thirty-one cases and was the first symptom in twenty-five. Vomiting and nausea occurred in twenty-six and were the first symptoms in ten. Dizziness was one of the first three symptoms in fifteen cases. There was bilateral choked disk in twenty-seven cases and unilateral in two. Paralysis of the muscles of the eye occurred in fifteen cases. Pure motor and sensory symptoms were infrequent. In eight cases there was paralysis or rigidity of one or more extremities, in two cases dementia paralytica, in one combined with coarse tremor. One case of astereognosis with tumor in the vermis is described. In the cases with signs of cerebellar dysfunction the duration was about half as long as in the cases without such dysfunction. The only certain roentgen result was an expression of increased intracranial pressure. Pathologically increased albumin in the spinal fluid was established in more than half of the cases examined; the cell count was definitely increased in only one instance (tuberculoma). The author's material also includes sixteen cases of tumor of the acoustic nerve, in seven men and nine women, of whom none were less than 20 years old and ten were more than 40. The average duration was twenty-nine months. The most common symptoms were headache in fourteen cases, unilateral deafness, dizziness, nausea and vomiting, each in seven cases, and tinnitus in five. Nausea and vomiting occurred twice as often in tumors in the posterior cranial cavity as in the cases of tumor of the acoustics. Mental disturbances were present in four cases, motor disturbances in four, hemihypesthesia in two. In six cases destruction of the pyramid together with distention of the corpus acusticus internus on the affected side was roentgenologically established. The albumin content in the spinal fluid was increased in the six cases examined; in four there was increased cell count.

Ugeskrift for Læger, Copenhagen

100: 359-382 (April 7) 1938

- Recent Investigations on Experimental Production of Cancer: Review. O. Thomsen.—p. 359.
*Meningococcal Meningitis Treated with Sulfanilamide (Streptamide). A. Eldahl.—p. 365.
Primary Infant Mortality: Relation to Weight at Birth and Causes. H. Bjerre.—p. 368.
Brachialgia. H. Heidemann.—p. 370.
Edematous Diseases: Ulcer of Leg, Phlebitis and Others and Their Treatment by Dr. Bisgaard's Method. P. Larsen.—p. 373.

Meningococcal Meningitis.—Eldahl reports twelve cases of serious meningococcal meningitis in children ranging in age from 4 months to 4 years, treated at Blegdam Hospital with intraspinal and intramuscular injections of 0.8 per cent solution of sulfanilamide (streptamide). Intraspinal injections of from 5 to 30 cc. were given daily, the amount in each case being somewhat less than the quantity of spinal fluid emptied. Intramuscularly from 35 to 150 cc. was injected daily, the amount depending on the patient's weight. Three patients, or 25 per cent, died; in the preceding six years the average mortality from meningococcal meningitis at Blegdam Hospital for children under 4 years was 70 per cent. The nine cases in which recovery occurred included three of meningococcal sepsis which were regarded as hopeless on admission.

THE STUDENT SECTION

of the

Journal of the American Medical Association

Devoted to the Educational Interests and Welfare of Medical Students, Interns and Residents in Hospitals

SATURDAY, JULY 23, 1938

Relative Values in a College Student Health Program

WARREN E. FORSYTHE, M.D., Dr.P.H., Sc.D.

Director, Health Service, University of Michigan

ANN ARBOR, MICH.

Progress is being made in the development of attention to student health work in American institutions of higher learning.¹ Many studies have shown a great diversity of approach and development,² while conferences have promoted uniformity and have given some direction to this interest.³ Methods of evaluation, including score sheets, have been proposed, but the great diversity of objectives, policies, organizations and programs now existing makes evaluation difficult, particularly without some predetermined outline of general values. The need for comprehensive, consistent planning for student health work in accord with the general aims of higher education is apparent.

Relative Values of Main Divisions

Main Division	Points
I. Organization and Administration.....	100
II. Institutional Program	25
III. Sanitation	175
IV. Health Education	400
V. Student Personal Service and Supervision...	300
	1,000

Most efforts at student health work have been launched with no better compass than a layman's uncritical idea of the traditional function of the physician. In many places the project was soon in troubled waters because the inadequate staff was swamped with an overwhelming demand for attention to the sick and injured, an obligation to carry an impossible program of teaching hygiene, doing routine examinations, following the athletic teams, and so on. Since the budget and staff were unequal to the program the work often lost the respect of the students and faculty. Thus a most important opportunity in higher education has often failed

of realization because college administrators failed to stick closer to their lasts.

The present brief discussion is submitted to promote the development of uniformity, consistency and proper relative emphasis in planning for the development of college student health work. Elements in the program are presented briefly in terms of achievements or objectives, without emphasis on methods of securing the results. Numerical ratings on a 1,000 point scale are given mainly as an expression of relative values. Ultimate objectives of student health work are those of the institution in which a program is operative.

A short comment is given under each main division, but more attention is given to an outline of secondary interests numerically rated. Such a framework may be useful in overview judgments of existing and contemplated departments and in outlining the development of more detailed scoring devices for program evaluation.

1. ORGANIZATION AND ADMINISTRATION (100 POINTS)

Conferences relative to organization for this work have generally agreed that the various phases of college hygiene should be united under a single head or so established as to insure efficiency and coordination of effort.

POINTS DISTRIBUTION

1. *Centralization* (50 points).—Centralized organization and administration is sufficient to insure adequate (a) authority for the control of health questions, (b) centralization and unification of records, (c) efficiency and cooperation of various persons and services.

2. *Research* (20 points).—The investigation of health problems particularly related to student health is being advanced to a good standard.

3. *Varied Experience* (15 points).—Major staff members are encouraged to participate in a wide range of the work.

4. *Reports* (15 points).—Frequent analyses of data and reports are made to promote best work and its proper appreciation.

II. INSTITUTIONAL PROGRAM (25 POINTS)

A consideration of student health not usually mentioned in such outlines deals with less definite questions of student health as influenced

1. Rogers: Student Health Services in Institutions of Higher Education, Bull. 7, Office of Education, U. S. Department of the Interior, 1937. University and College Student Health Services, Bureau of Medical Economics, American Medical Association, 1936.

2. Storey: The Status of Hygiene Programs in Institutions of Higher Education in the United States, Stanford University Press, 1927.

3. Student Health Association Conference, First National Conference on College Health, Second National Conference on College Health Council, 50 West Fifth Street, New York.

by the course of the daily academic and extra-curricular program. Studies on the relation of fatigue to student health have not been widely reported but the question is of importance.

POINTS DISTRIBUTION

1. *Daily Fatigue* (10 points).—The duration and arrangement of recitations, vacation periods, games, examinations, drills, laboratory work and so on produce a minimum of fatigue in students.

2. *Academic Pressure* (10 points).—Unwholesome pressure on students to meet scholastic standards are eliminated.

3. *Related Hazards* (5 points).—Hazards of extra-curricular or quasiacademic activities are eliminated.

III. SANITATION (175 POINTS)

As the oldest emphasis in general public health work, attention to the student's environment and sources of life still is demanded. With the improved standards of sanitation generally, however, this is becoming relatively less important.

POINTS DISTRIBUTION

1. Adequate food of good chemical quality, free from disease producing organisms (25 points).

2. Food and drink service free from controllable mouth or intestinally borne infections (50 points).

3. Wholesome climate and adjacent territory (15 points).

4. Adequate facilities for exercise, sports and recreation (25 points).

5. Living quarters with adequate space, light, heat, equipment, cleanliness, toilet and fire escape facilities. (25 points).

6. Class rooms, libraries, shops, gymnasiums, pools and laboratories to be adequately clean, lighted, ventilated, spaced, free from mechanical hazards and provided with adequate toilets, drinking fountains and fire exits (25 points).

7. Freedom from obvious health hazards—fire in particular—in public buildings off the campus (10 points).

IV. HEALTH EDUCATION (400 POINTS)

Health teaching would seem to be the part of the entire program which is clearly a responsibility of an educational institution. This has received only halfhearted support in the history of college hygiene generally. Broadly defined, health education merits the greatest allocation of resources in the program. Clinical medical service to students should not be allowed to divert limited resources from health education. The problem of physical education as related to the college health program would be rated under this heading.

POINTS DISTRIBUTION

1. *Formal Instruction* (300 points).—All candidates for the bachelor's degree receive sufficient instruction to provide an understanding of modern personal and community health problems. This should enable the graduate to serve intelligently as a layman leader in personal, family and community health problems.

The level of subject matter and methods of instruction are comparable to those for other subjects in the institution. These conform to the recommendations of the National Conferences on College Hygiene.

2. *Informal Instruction* (100 points).—A high standard of informal, more personal, instruction by use of

health conferences, illness situations, general and group lectures, publications, campaigns and posters is sustained.

V. STUDENT PERSONAL SERVICE AND SUPERVISION (300 POINTS)

Consistent with trends in public health work in general, the developments in student health work have become more and more centered on the student.

POINTS DISTRIBUTION

A. *Routine Health Examinations* (100 points).

1. *Before Admission* (50 points): Prior to admitting the student finally, the institution has a record for him which meets a high standard of health examination. This record reveals conditions dangerous to the student or his associates and indications for promoting the student's best development. The examination includes history, attention of specialists including psychiatry, with laboratory and special tests. On the basis of this record, students are rated in various ways for best adaptation to the college program. The examination is followed by appropriate action, including reasonable efforts to secure attention to health defects.

2. *During Residence* (30 points): At yearly intervals, students have a health conference of not less than fifteen minutes' duration with a physician.

3. *Preliminary to Extra Work* (10 points): Prior to participation in institutionally approved curricular or extra-curricular, possibly somewhat hazardous activities, such as extra hours of study or athletics, health approval is first obtained by the student.

4. *Academic Failure* (10 points): Students who fail to make satisfactory progress in academic work are required to check on health status.

B. *Care of Student Illness* (150 points).—This phase of student health work has presented most difficult problems. It is the activity which is most definite and for which the demand has become most insistent. Some institutions have taken practically full responsibility for supplying complete care of student illness. This has usually been supported in part at least by health fees collected from all students with annual tuitions. Some institutions have gone part of this distance and others operate on a policy of assuming practically no such responsibility.

A college is justified in taking the position that a high standard of medical service must be available to its students but that the institution would assume to supply that service only because it is not forthcoming otherwise. The college has responsibility for custody of students; students learn best by actual experience the methods of good scientific medical care; since the prevention of much illness requires early attention to beginning processes, students should have access to medical advice with the least possible hindrance, such as fear of costs; also the educational experience of worthy students should not be allowed to terminate because of the element of large expense for major illness. When these conditions can be satisfied otherwise, most college administrators will probably be glad to confine their hygiene programs more nearly to work characterized by the term health education. It is fair and proper to question the extent to which these clinical activities should now be allowed to retard the development of the primary health education features of a program in college hygiene.

The 150 point award is made when students are able to obtain a high standard of scientific medical care for any condition which has significant relation to their educational experience. It is obtainable at all times with reasonable dispatch and under a financial arrangement which does not discourage early solicitation and which does not terminate the student's education because of expense for attention to illness.

Attention of all specialists, including psychiatry and allergy, and special diagnostic services are available.

C. Contagious Disease Prevention (25 points): Students are sufficiently controlled to apply valid established specific methods for the prevention of the spread of communicable disease.

D. Unit Health Records (25 points): Complete unified personal and summary health records are kept to serve the purposes of advising the student, compiling reports and making essential studies.

SUMMARY

1. The developing student health programs in our institutions of higher learning need direc-

tion on the basis of a critical evaluation of activities in relation to primary objectives of such institutions.

2. The interests as recognized now in college student health work have been discussed briefly and given relative numerical evaluations with subdivisions.

3. Health education should be the first and best supported part of the college health program, so far as primary college interests are concerned.

1819 Hill Street.

Anatomic Rationale and the Medical Student

CHARLES F. DE GARIS, M.D.

Professor of Anatomy, University of Oklahoma School
of Medicine

OKLAHOMA CITY

The order in which procedures of dissection may be offered to the student should not in itself be regarded as of great importance, since these procedures are subject to a wide variety of arrangement. Very diverse sequences are followed in the anatomic laboratories of different schools, and from a comparison of these sequences it is difficult to say that any one is more logical than the rest.

My own experience suggests the assignment of viscera, blood vessels and the floor of the pelvis to follow at once the dissection of the abdomen, with perineal approach to the pelvic floor as an integral part of this procedure. The advantages of simultaneous approach to the pelvis from within and from without are fairly obvious, especially when it is recalled that the perineal dissection, itself one of the more difficult assignments, may well be undertaken after the dissectors have acquired dexterity in dealing with fascial and muscular planes and with the devious courses of nerves and blood vessels.

As a means of acquiring this dexterity the dissectors might profitably begin with the extremities, where most of the procedures of dissection are clearly and simply presented and where direct comparisons of the upper and lower extremities serve to enhance the value of this particular discipline. A number of laboratories have long recognized the merit of this approach. As an objection to this it is urged that the student, beginning his dissection with the extremities, will find nerves and arterics whose proximal connections are as yet unknown to him. Granting that such is the case—and in some degree this is so, no matter where he starts—the alternative seems even more awkward. Thus when the brachial plexus is dissected early, as part of the procedure in the neck and axilla, and the arm is dissected some months later, the nerves to the arm, which are the largest derivatives of the plexus, are left as

so many names to be learned by rote. Were continuity at once established between plexus and extremity, both plexus and nerves would acquire their due significance.

The case of the brachial plexus is merely taken to illustrate the difficulty one encounters in arranging a schedule in which dissections follow one another in natural, logical order. The same difficulty is apparent, is in truth greatly magnified, in arranging a curriculum, especially in the allocation of embryology with reference to anatomy. The whole subject of anatomy is of course widely illuminated by a comprehensive grasp of embryology. But to undertake a study of embryology without a speaking knowledge of anatomy is, in point of fact, to journey in foreign parts without benefit of vernacular.

As with embryology and anatomy, so with dissection, a start must be made somewhere, and the language, methodology and rationale of the subject must be acquired in transit. During the progress of the dissection it should become apparent to the student that anatomy is not just a dull assortment of descriptive matter to be memorized from books. The modern textbooks of anatomy, amazingly complete as they are, must be regarded as compendiums from which one may learn the language of the subject and in the appendixes and footnotes of which something of the methodology and rationale. But textbooks are necessarily limited in scope and purpose to describe as best they can the usual, or so-called normal, human body. In practice, however, dissection of the body itself brings before the student, preferably early in his course, the curious fact that his specimen is something, it may be a great deal, more or less than the textbooks lead him to expect. In other words, he is confronted with variation.

Once the concept of variation is introduced, the course in anatomy should become a personal adventure for the student. He should now be

aware that he is no longer playing the tedious game of matching parts of the cadaver against figures and descriptions in the book. At this point, if he is alert, he will give over the sorry task of memorizing human anatomy and will begin to seek general principles which include, and account for, the variable as well as the normal. He will find that the muscles fall into phylogenic groups wherein variable as well as normal muscles may be arranged according to nerve supply; that the segmental nerves of the trunk in certain regions, slightly variable up or down the axis, are drawn off in definite sequence to supply the extremities; that nerves of the head are not just arbitrarily complicated but are drawn off to supply two repetitive systems, one myomeric, the other branchiomeric; that the blood vessels are, as it were, the final common path of minimum work condensed from a primitive capillary net. Even the gastrointestinal tract, at first impression so bewildering in its complex relations, will be found to have carried out a few simple evolutions as a tube system growing in length within a confined sac, various malpositions of the tract merely exemplifying retardations of this growth.

These and other concepts of anatomic rationale will gradually become the student's common property and he will find that he can build on them, as a frame of reference, a very large content of facts, not, as he started out to do, by memorizing them, but simply because, as one so often hears in the dissecting room, "they make sense." The student who never discovers that the structure and mechanism of the human body make sense, who never perceives any rationale to the subject of anatomy, surely never learns anatomy in any comprehensive meaning of the term.

This being so, it may seem a sheer waste of time to offer anything but a short course of lectures on anatomic principles. Yet the fact remains that anatomy cannot be learned in this simple way. No matter how clearly these principles are enunciated to the student, unless he passes through a certain season of labor and doubt and difficulty with the cadaver the principles of anatomy will remain mere abstractions with no association fields about them at all. So there appears to be an element of truth in the assertion that anatomy can be learned but not taught. The student must acquire from the cadaver a first-hand stratum of facts, won in the usual mulling fashion, before he is receptive to general principles. In brief, he himself must feel the need of these principles before they can be significant to him.

This is what may be called the latent period of his growth into anatomy, and it varies greatly in length from one student to another. Some students are receptive to general principles after

a few weeks with the cadaver, some after a few months, and some never at all. But it should not be supposed that this latent period is necessarily one of fruitless effort and unrelieved tedium. On the contrary it may be, and usually is, the most formative period in the student's course, because it is during this time that he becomes, what he is apt to remain, a good or a bad dissector.

In the nature of things he has to acquire the methodology of dissection in a relatively short time. His previous training in biology may or may not have been adequate to this new experience. But in any case, during the first few weeks with the cadaver he usually sets himself what level of precision and clarity of demonstration he is to sustain for the rest of the course. While it cannot be said that the best dissector is invariably the most brilliant student, or the one with the shortest latent period for general principles, it is fair to assert that when a student persists in sloven, reckless manipulation of his dissecting material, he is apt to keep his mental furnishings in the same state of disarray. The records of students, not only in anatomy but also in the other basic courses, bear out this correlation to an astonishing degree.

The methodology of dissection, then, is worth a deal of careful consideration on the part of the teaching staff. From the very first the student needs to be advised on the procedure which will best promote the demonstration in hand. He does not as a rule need, or relish, lengthy discourse, such as may be had from elaborate dissecting manuals. He requires clear, concise statements, which will lead him as soon as possible to the desired end and leave him with the feeling that the demonstration is essentially his own. Procedures of dissection should therefore be outlined for him with this specific need in mind and with the hope of aiding him to pursue his course in some measure of self assurance, discernment and curiosity.

Literary Treasures

A few of the literary treasures in medicine are the *De Medicina* of Celsus of Rome—a finer piece of concise writing than the books of Galen which followed; the medical translations of Linacre; the *De Motu Cordis* of William Harvey, a clear, forceful and entertaining treatise as well as the announcement of a great discovery; the *De Aneurysmatibus* of Lancisi, physician of that very intelligent pope Clement XI, one hundred years later; the *Opera* of Sydenham of 1666; the volumes on heart disease by Senac and Corvisart, physicians of the French court in 1749 and 1806 respectively; the *De Sedibus et Causis Morborum* of Morgagni in 1761; the writings of Heberden and Withering at the end of the eighteenth century; the notable treatise on the heart by James Hope of London in 1832; Trause's *Lectures* of 1861; Osler's *Practice of Medicine* of 1892, and Cushing's *Life of Osler*, published in 1925. —White, Paul D.: *Doctors and Books*, *Diplomat* 10: 179 (May) 1938.

Nutrition for Medical Students

MARY ANN METZGER, M.S.

CHICAGO

A course in nutrition has for some years been included in the curriculum of senior medical students at the University of Chicago. It is a required course and is given along with the outpatient clinics work.

The course consists of from eighteen to twenty hours spent in the class. Each group consisting of two or three students meets from six to eight times during the quarter. Classes are conducted informally and approach a discussion rather than a lecture group.

It is useless to teach therapeutic diets without a basis; therefore we spend quite a lot of time on normal nutrition for the adult (they have pediatric nutrition in their third year). Each student calculates his own dietary and compares it with our optimal standards. It has been quite interesting for them to see how they stand. A few who have been underweight have been able, with a little change in their dietary habits, to put on the needed poundage. On the other hand, not a few have been able to take off some of the excess. We stress the fact that in normal nutrition there is no place for food concentrates or proprietary foods.

From the Department of Medicine, University of Chicago.

More time is devoted to diabetic diets than is devoted to any other. This we feel is justified, as diabetic dietary management is so important yet it really is simple if one is familiar with a few of the rudimentary principles. After each student is adept at calculating diabetic diets, we spend one class period in the food laboratory. Each student is required to calculate a diabetic diet which would fit himself were he diabetic, and to weigh the food, cook it and eat it. The students don't have to wash the dishes! This one laboratory period is vastly important. It is all very well to figure 500 Gm. of 5 per cent vegetable in a diet, but it's something else to eat it! And so our students learn.

Our normal diet is used as a basis for all therapeutic diets and this is drilled into the students much as the A B C's were when I was in grammar school (they don't teach the alphabet that way now I am told). Each special diet that is used in the Albert Merritt Billings Hospital is thoroughly perused and explained in detail. Of course special diets vary with each institution or hospital but here again a few rudimentary principles come to the aid of the new intern.

Comments and Reviews

INTERNSHIPS AND RESIDENCIES

A committee of twelve representing Cornell University Medical College, the College of Physicians and Surgeons of Columbia University, Long Island College of Medicine, New York Medical College and Flower Hospital, New York University College of Medicine and the New York Academy of Medicine made a comprehensive three year study of internships and residencies in New York City. The report of the committee has been published in book form. John Wyckoff, M.D., Dean of New York University College of Medicine, chairman of the committee when it was organized but now deceased, was succeeded as chairman by Frank A. Babbitt, M.D., president of the Long Island College of Medicine. Subcommittees of New York physicians actively engaged in medical education were appointed to make certain studies. The New York Committee on the Study of Hospital Internships and Residencies was assisted also by various local and national organizations as well as by some specially qualified individuals. The committee was aided by a grant from the Commonwealth Fund. They

Report by the New York Committee on the Study of Hospital Internships and Residencies.

visited the hospitals in New York City, made complete inspections of buildings, laboratories, record rooms and libraries, attended clinics, operations, obstetric deliveries, conferences, seminars and clinical society meetings, and visited the wards. They made a careful estimate of factors entering into the success of these activities from the point of view of the hospital staff. They paid especial attention to the attitude of the interns toward the hospital, the patients, the nurses and the attending staff, to the organization of instruction and continued supervision of interns in their duties, whether the hospital staff was adequate in number and whether their time was properly planned. They inquired into the qualifications of the attending staff, their willingness and ability to instruct the interns, their attitude toward patients; they investigated the superintendent of the hospitals and the directors as coordinators of intern education. They studied the provisions in the hospitals for intern health, housing, food and recreation. Many personal interviews were made and 1,904 graduates of the five medical schools in New York City, mostly out in practice, were reached by correspondence. More than 90 per cent of these graduates had served their intern-

ships in hospitals in the New York metropolitan area. The various studies of internships and residencies in New York City hospitals were carried on largely by the subcommittees, which submitted reports to the main committee at its regular monthly meetings.

This intensive study merits and has much more than local interest. It has been made clear that a continuation of the committee's work will be of value to medical education and to standards of service and for that reason the committee plans to maintain its organization permanently in order to gather current data from local hospitals where internships and residencies are available for graduates of medical schools. The committee will continue to be representative of the various medical schools and other groups concerned with the training of the physician; it plans to encourage the improvement of services for interns and residencies and to make available to those responsible for the guidance of students information relative to interns, residencies and opportunities for graduate medical education.

Among the titles of chapters in this nearly 500 page book are "The History of Internships and Residencies," "The Relation of Intern and Graduate Education to Practice," "Preparation and Training of the Intern," "Factors Contributing to Hospital Staff Efficiency," "Hospital Libraries and Their Use" and "Organization of the Internship Program and Capability of the Hospital in Relation to Quality of the Internship," and "Residencies and Fellowships in New York City Hospitals."

TEST OF PERIOD OF SERVICE

The final test of the adequacy of the period of hospital service is not whether the internships and residencies gear satisfactorily into the hospital program but whether the training received prepares men to become competent and reliable physicians. The defects and deficiencies of internships have been pointed out previously by the Council on Medical Education and Hospitals of the American Medical Association and by the Commission on Medical Education.

The contacts made with the nearly 2,000 graduates and former interns in these hospitals showed that 60 per cent of them engaged in general practice, 38 per cent were specialists and 2 per cent were not in practice. About half of the general practitioners, half of the specialists in general surgery and half of the general practitioners attempting major surgery had rotating internships. Nine tenths of those doing comprehensive general practice and those emphasizing obstetrics served internships in which rotating plans predominated. It is clear, the report states, that the influence of the forms of internship on the type of practice engaged in was not particularly clearcut. There was agreement among members of the committee that all

interns should have a minimum of one year on medicine and surgery, preferably divided into periods of six months apiece; the reactions were not so unanimous as to obstetrics, the estimates ranging from three to six months. The minimum assignment in pediatrics was set at three months. There would be, therefore, little or no time left for the other elements of training, if the duration of the internship is set at two years. There is insufficient provision for assignment to medical and surgical specialties, anesthesia, pathology, clinical laboratory, roentgenology, emergency service, outpatient department and private pavilion. There are two possible solutions: lengthening the internship to three years, which has been tried in two of the hospitals, or permitting the selection of a portion of the service according to the intern's interest and aptitude. Straight internships of one year assignments may be ideal for the hospital's best interests, but, the report says, this can be justified only by individuals whose minds are made up to specialize from the very beginning. For the majority of interns, therefore, the selective experience seems the soundest educational approach to practice. This idea is not new, for selective arrangements have existed in several New York hospitals for many years.

While nearly all interns eagerly compete for assignments to the surgical and obstetric services, actually only 56 per cent of the practitioners surveyed by the committee were doing obstetrics, and 40 per cent were performing major operations. If this response may be taken as a measure of community need, it seems fair to assume, the committee says, that not more than half of the interns require drill in major operative techniques as a basis for further training and that a slightly larger proportion need to benefit in obstetric deliveries. The data gathered by the committee during its survey indicated that proper use of the hospital resources now available would give adequate training in surgery and obstetrics to just about the proportion of the intern group indicated. It seems, therefore, that a great deal of operative surgical training is now wasted on interns who will not use it and that a like situation exists in obstetrics.

PROBLEMS OF OFFICE PRACTICE

Many of the physicians and ex-interns of the New York City hospitals who were reached expressed regret that more time had not been given during their period of hospital training to problems of the sort encountered in home and office practice which could best have been studied in the outpatient clinics.

About one third of the practitioner group had some criticism to make of their internships. These criticisms pertained mostly to the lack of essential items of experience, poor quality of

teaching, and misplaced emphasis. These doctors were concerned almost entirely with the need for better educational organization of internship and rarely with financial considerations. In fact, only four of the 1,904 mentioned the desirability of a small salary. In their practice, judging by the trend over the years, their inclinations were away from salaried positions.

EDUCATIONAL VALUE OF THE INTERNSHIP

The committee was interested to learn that the American undergraduate preparation for the hospital internship was satisfactory and in general superior to the training received in European schools. With few exceptions, foreign graduates have fitted poorly into the American scheme of things. There was general agreement among the attending staffs engaged in intern training that the preparation in internal medicine, both theoretical and practical, was uniformly satisfactory. However, while training in surgical diagnosis and in the mechanism of obstetric delivery has also been good, newly appointed interns have required much additional basic teaching in the maintenance of asepsis, in the performance of minor surgical techniques and in the care of cases in labor. With certain exceptions there was general agreement on the inadequacy of the teaching given students in the medical and surgical specialties. It was plain to the committee that the medical college curriculum and the internship program could be better coordinated. Frequently the hospitals fell short in preparing new interns for their hospital opportunities and duties. The remedy depended on better organized cooperation between hospital administrators and professional staffs.

The progress of the intern through his service has depended about equally on the initiative and vision of the intern himself and on the leadership and guidance of the attending staff. Much remains to be done to place the organization of the internship on a thoroughly satisfactory educational basis. In somewhat less than half the hospitals, many deficiencies were noted in these particulars. A higher rating was observed in operating room experience, while the outpatient training had the lowest score of all. Internal medicine was strongest in opportunities afforded for complete diagnostic study of new admissions and teaching of such correlations as x-ray and electrocardiography. The weaknesses observed were in the supervision of routine laboratory tests, in the teaching of diagnostic and therapeutic techniques, and in recording of notes by members of the attending staff in checking the interns' observations. The pediatric training given in the average rotating internship has a weak position because of the short time usually given it and because of the low index of interest in the subject by the interns. The intern on obstetrics in the average

hospital has been too much concerned with the care of the bed patients and their delivery and too little concerned with antepartum and postpartum care. Their chief objective has been the opportunity to perform forceps extraction, episiotomy and other operative procedures.

In about half the services in the city the quality of medical record keeping by the interns was observed to decline during their hospital service. Modern advances in record keeping have found their way but slowly into these hospitals.

Intern organizations have been of service in educating their members to recognize the importance of health examinations and in enlisting the interest of responsible bodies in their welfare. Barely 70 per cent of the hospitals were found to have acceptable libraries and in eight hospitals there were no libraries. About three fourths of the interns reported an hour a day as the average time spent in study. From one to three journals satisfied the requirements of most of them. In a few hospitals journal clubs have been formed, and under proper supervision they had had a valuable influence on the intellectual life of the house staff. Of the seventy-seven hospitals, forty-one designated one person as librarian; but only eighteen librarians were on a full time basis.

RESIDENTS AND THE TRAINING OF SPECIALISTS

Two thirds of the residents consulted during this study were determined to limit their practice to a specialty. The others contemplated general practice with complete specialization as soon as economic considerations would permit. Where residencies have been installed the testimony to their desirability has been almost entirely favorable on the part of attending staffs and interns. The committee believes that a residency of less than two years is an inefficient arrangement both for the hospital and for the educational development of the individual. If it is conceded that residencies are to assume the major role in the future qualifications of specialists, it is difficult to predict how many men should be trained to meet the need. It may be fair to conclude that more than 40 per cent of intern groups will need to obtain residencies if a sufficient number of qualified specialists are to be supplied for future needs. If that proportion of the interns is given residency training, the number of residents on duty at the time of the committee survey will meet the needs of the situation. A considerable number of these residencies, however, do not meet the minimum educational requirements outlined by the committee. Judging by the rapid increase in the number of residencies being installed, it seems that the normal rate of increase will supply the requirements for special practice if resources are properly organized. An enlargement of the resident aggregation will necessitate appropri-

ations for enlargement of laboratory and other educational resources, for housing and for salary stipends. Residencies in obstetrics and gynecology enjoyed the highest rating of the survey, with medicine in an intermediate position, while many of those in surgery and the ancillary fields need bolstering in quality. If the standards of residencies would be fostered as the committee suggests, the changes that would follow would go far to remedy the most serious deficiency among hospital staffs, which is a lack of trained teachers. It is curious that little formal effort has been made in medicine to qualify a sufficient number of its members in the art of teaching. To meet this deficit of trained teachers the committee believes that the best insurance for future needs is the development of a sufficient number of residencies on a truly educational basis. The primary and essential purpose of hospital internships and residencies is education. It is only by this practical supervised experience that the student doctor can be qualified to assume independent responsibility for the care of patients.

RECENT DEVELOPMENTS IN INTERN TRAINING

Interns serve a combined utilitarian and educational function. These objectives are not all at cross purposes. If we succeed in training interns well, a still more commendable position on the treatment of patients should follow. Nevertheless, according to Peterson,¹ educators are unprepared to endorse the intern year without qualification unless it represents a continuance of controlled training. Too often the transition from the carefully supervised activities of medical schools to the relative freedom of the hospital wards results in retarding the pace of the learning process and in loss of enthusiasm in the analytical approach to medical problems which the medical schools have taken much pains to inculcate. If the hospital year is to contribute effectively to medical education and demonstrate continued progress in that direction, greater effort must be taken to supervise and elevate the careers of the weaker brethren. Good interns can be trusted to take care of themselves. Along these lines, internships have shown some advancement in the last few years. Where the staff intern committee assumes the responsibility for the entire teaching program, a satisfied and harmonious intern corps is always found. The best time to assume this duty is on the day the intern enters the hospital, when his path can be made smoother by giving him an introduction to the hospital and its several functions and important personnel. Such an introductory practice yields excellent results in bridging the distressing

period that confronts all services when new house officers arrive. Later, meetings should be conducted periodically with the hospital staff to instruct them in hospital regulations and standing orders and to adjust other difficulties when they arise.

Another step is the regular receipt of reports from each department head on the character of the service which each intern supplies. The house officer presents a list of procedures and experiences he had participated in, subject to verification by the department chief, who also appraises the quality of the work done. Quite apart from its value as a stimulus to the house officer is its value as a prod to the head of the department. Furthermore, it gives the intern committee insight into certain situations. If reports are consistently bad from a single service, the fault is thought to be generally in the teaching and not with the pupil. This procedure does not represent a new principle, but is only the extension of a successful pedagogic precept from the school into the hospital, where there is now beginning to be some belated acceptance.

THE HEALTH OF INTERNS

Why do some hospitals fail to exert great care in supplying regular physical examinations and standard protective tests and inoculations for interns when they do so for practically all others of the hospital personnel? The record of interns breaking down from tuberculosis, for example, because of a lack of early detection of the disease in the midst of abundant facilities for that purpose, does not speak well for this practice. If every one connected with the hospital were to be physically examined periodically, Peterson adds, such institutions could be represented as advancing health measures in logical fashion.

Literature referring to the internship has been scarce and unproductive, and yet basic formulas have been developed which serve to improve the unreliable methods of former days. Those in control of internship programs must realize that adjustments need to be made recurrently in keeping with the previous training and future programs of the house officers. The instruction afforded interns and residents in the specialties has been so poorly done that it has led to the development of the specialty certifying agencies. The fundamental considerations however will probably not change. They are in the language of the *Essentials of a Hospital Approved for Training Interns*, as follows: "It is emphasized that the object of the general internship is to round out the medical graduate's training so as to enable him to enter into the general practice of medicine and not to equip him to enter directly on any specialty. For the latter he should obtain further and different instruction." If this statement of purpose is kept in mind, at least two of the most frequent

1. Peterson, Carl M.: Recent Developments in Intern Training, *Hospitals* 11: 47 (April) 1937.

criticisms of the internship as now conducted will have been answered. These are (1) that the hospital year concentrates interest on the end results of disease rather than on early recognition and treatment and (2) that interns, since they are in a position to translate present opportunities in terms of future usefulness, are inclined to slight the commonplace in pursuit of the unessential, the unusual or the spectacular. While these indictments are largely true, the means of correction are at hand and are beginning to be used. In the first place, the proper use of outpatient material permits contact with ambulatory medicine and its special problems. Affiliations are usually available in most communities for the treatment of mental and communicable diseases and for the attendance of interns at pediatric, metabolic, antepartum, venereal and other clinics. Comment has been noted about the ignorance of medical graduates in some of the practical procedures that are regularly taught to nurses; the gratitude of interns is usually forthcoming for demonstrations of these kinds. In some hospitals there are made available either by the interns or by the hospitals themselves opportunities for valuable experiences which usually escape those whose time is occupied in purely clinical medicine. These experiences should be arranged to introduce interns to medical organization work, economics, ethics, jurisprudence and the compensation laws.

Hospitals excuse their lack of a planned service for interns by not professing to be teaching institutions; they believe in the program but may not provide it. The Commission on Medical Education found the following to be the ten principal demands made on practitioners: (1) infections of the upper respiratory tract, (2) general medical diseases, (3) minor surgery, (4) gastrointestinal disorders, (5) obstetrics, (6) venereal diseases, (7) throat infections, (8) pneumonia, (9) contagious diseases and (10) ear, nose and sinus infections. How many hospitals fail to supply an adequate introduction to this essential experience?

MEDICAL APTITUDE TESTS

The director of study of the Committee on Aptitude Tests for Medical Schools, F. A. Moss, reports in the May 1938 *Journal of the Association of American Medical Colleges* on the work of the last year, including (1) a study to determine whether there is a medical aptitude independent of general aptitude, (2) the administration of the medical aptitude tests to applicants (in 1937) and the ratings to the medical schools, and (3) the value of the aptitude test in predicting grades in the freshman class of 1936-1937.

The Medical aptitude tests of first year medical students and students in nonmedical pro-

fessional schools were compared. If the average scores of the medical and nonmedical groups were similar, the test could be considered merely as a determinant of general intelligence, but if the medical students made consistently higher scores then the special value of the test would be indicated. Form I of the test was given to 731 students of schools of education, commerce, law and engineering and the graduate school of the Naval Academy, and the scores were compared with those of 963 medical students on the same test.

The nonmedical students were found to score distinctly lower than the medical students. Students in education and commerce were particularly low; 75 per cent scored below the low 10 per cent of medical students. One half of the law students scored below the low 7 per cent and 75 per cent below the low 20 per cent of medical students. Engineers, who usually lead other groups in tests of abstract intelligence, were little superior to other nonmedical and vastly inferior to medical students. The Naval Academy group performed best of the nonmedical groups but were below the medical students. Not more than 11 per cent of any nonmedical group equaled the upper 50 per cent of the medical group. The lower quarter of the medical students scored higher than the upper quarter of the nonmedical students with the exception of the Naval Academy group. In an instance in which law and medical groups of the same university were tested, the former scored decidedly below the latter.

A NEW FORM OF TEST

In 1936-1937 a new form of test was given 10,853 students in 627 art colleges who planned to apply for entrance to medical school in the fall of 1937. This test consisted of five parts: (1) general information, (2) vocabulary, (3) spelling, (4) logical reasoning and (5) understanding of printed material. Total scores ranged from 41 to 372 out of a possible 380 points. One half of the students fell above and one half below the medial total, 260 points; the highest fourth made above 296, the lowest fourth below 221. The tests were first given to 1,552 students in medical schools in 1928; from February 1931 they have been conducted in pre-medical schools. The number of students admitted to medical school without taking the test has been decreasing. Of the last three freshman classes, more than 80 per cent had been tested. Comparisons of scores made by students admitted in the autumn of 1936 with scores of all applicants tested indicate that students who score high are admitted in larger numbers than students who score low.

The test predicted success in the freshman year of medical school with considerable accuracy. When freshmen were divided into ten equal groups on the basis of test scores, the

average scholastic grade was found to decline evenly from the highest to the lowest tenth and the percentage of failures steadily increased.

Supplementary tests, i. e., those not given at the regular time (December), are less reliable

because old tests are used about which the student may have advance information and the examiner who has charge of only one or two students is less likely to adhere to standard procedure.

Medical College News

Medical schools, hospitals and individuals will confer a favor by sending to these headquarters original contributions, reviews and news items to be considered for publication in the Student Section.

Gift for Interns' Home at Touro Infirmary

A gift of \$60,000 has been received by Touro Infirmary, New Orleans, from Mrs. Norman Mayer for the construction of an interns' home in memory of her husband, who was interested in the development of the hospital. The building will be two stories high, of reinforced concrete and glass brick.

Cushing Prize for Essay on History of Medicine

Miss Jean Captain, Montclair, N. J., has been awarded the first annual Cushing Prize for the History of Medicine at the University of Rochester School of Medicine and Dentistry. Miss Captain's subject was "A History of the Classification of Human Blood Corpuscles." This prize of \$100 will be awarded annually to the students who submit the best essay on some historical or medical topic. The prize is named in honor of Dr. Harvey Cushing of New Haven, Conn.

First Case Report Contest at Detroit

At a joint meeting of the Wayne County Medical Society and the East Side Physicians Association in Detroit, May 2, the awards were made in the first annual case report contest for junior interns in the hospitals on the east side of Detroit. The first award went to Alice E. Palmer, M.D., of the Receiving Hospital for a case report on "Traumatic Rupture of the Gallbladder Following Steering Wheel Injury." The second award went to Robert N. Trapp, M.D., of the Receiving Hospital for his case report on "Acute Infectious Mononucleosis," and the third award to Harold A. Ott, M.D., of the Receiving Hospital, for his case report "Puerperal Sepsis with Metastatic Suppurative Arthritis and Subcutaneous Emphysema."

The Mayo Lecture at Ann Arbor

The annual Mayo Lecture before the students and faculty of the University of Michigan School of Medicine, Ann Arbor, was delivered by Dr. M. S. Henderson of the Mayo Clinic, April 29, on "The Treatment of Fractures of the Neck of the Femur." During the second annual neuro-anatomic conference sponsored by the department of anatomy of the University of Michigan School of Medicine, April 18, university lectures were delivered by Dr. Stephen Walter Ranson, Northwestern University Medical School, Chicago, and Dr. C. Judson Herrick, professor emeritus of neurology at the University of Chicago. The subjects were "Somnolence Caused by Hypothalamic Lesions in the Monkey" and "Analysis Integration and Control of Conduct" respectively.

Study of Tropical Diseases in Puerto Rico

Frederick A. Stine, William G. Sauer, James R. Glier and Adolph H. Frucht, all students of the University of Cincinnati College of Medicine, were selected to accompany Dr. T. J. LeBlanc, head of the department

of preventive medicine, to the school of tropical medicine in San Juan, Puerto Rico, for the study of tropical diseases. Mr. Frucht is a German exchange student. The party sailed from New York June 16 aboard the steamship *Coamo*. While the students have to pay their transportation and board, this was arranged by the making of scholarships. With the cooperation of the Puerto Rican government and the Puerto Rican school of tropical medicine, this party will not only study cases of tropical diseases at the hospital in San Juan but will go into the interior to study cases which cannot be moved to San Juan. This is the second time that Dr. LeBlanc has been in charge of an expedition of this kind.

Annual Case Report Contest at Pittsburgh

John Conley, M.D., Mercy Hospital, won first prize in the recent annual case report contest for interns sponsored by the Allegheny County Medical Society, Pittsburgh. Second prize went to Francis P. Ferraro, M.D., St. Francis Hospital, and honorable mention to Drs. Philip Becker, Victor Markson, Isadore B. Swickley, all of Montefiore Hospital. The title of Dr. Conley's case report was "Specific Recurrent Pneumonia," of Dr. Ferraro's report "Hemolytic Streptococcus Meningitis of Otitic Origin," of Dr. Becker's report "A Fatal Case of Juvenile Cirrhosis of Obscure Origin," and of Dr. Markson's report "Coronary Artery Disease," and of Dr. Swickley's report "Peptic Ulcer and Bilateral Neurocytoma of the Adrenals with Metastasis to the Lungs." Twenty-three manuscripts were submitted.

The Hoover Memorial Fund at Western Reserve

The Alumni Association of Western Reserve University School of Medicine, Cleveland, has transferred to the university the Charles F. Hoover Memorial Fund so that the income of about \$350 may be awarded annually to a prominent student in the school of medicine as an honor scholarship, to perpetuate the memory of Dr. Hoover, who was professor of medicine at Western Reserve University from 1909 until his death in 1927. The scholarship this year was awarded to Alfred Humphrey Hill, the ranking member of this year's graduating class, who is to become an intern in medicine in the University Hospitals next year.

Lectures for Interns in New York

A series of clinical lectures for the interns of Lincoln Hospital, New York City, are being held on Wednesday afternoons. Among the lecturers have been Dr. William Goldring on "Kidney Function Tests," Dr. Harry Altman on "Practical Pediatrics," Dr. Matthew Walzer on "Asthma and Hay Fever," and Prof. Fritz Meyer, formerly of Berlin, on "Sulfanilamide Therapy." The members of the house staff at the Queens General Hospital, New York City, through a committee invited a series of lecturers to address them on subjects emphasizing the diagnosis and treatment of the more common ailments and office procedures.

Proposed Dormitory for Medical Students

The board of regents of the University of Michigan has approved the erection of a \$200,000 dormitory to accommodate 120 medical students. The building will be financed on a self-liquidating plan. The site for the new unit has not been chosen but the executive faculty has suggested that the corner of Observatory Street and Washington Heights be considered. The dormitory is expected to be ready for occupancy in September 1939.

First Award of Fellowship at Harvard Medical School

Dr. Louis H. Nason, assistant in surgery at the Harvard Medical School, Boston, has been appointed the first recipient of the Louis E. Kirstein Fellowship at the medical school for the academic year 1938-1939. The fellowship was established to promote "scientific medical education" through a gift of \$28,550 last fall to the university by friends of Mr. Kirstein, vice president of the William Filene's Sons Company, Boston, in honor of his seventieth birthday.

The Robert J. Terry Fund

A portrait of Dr. Robert J. Terry, professor and head of the department of anatomy, Washington University School of Medicine, St. Louis, was presented to the university June 4 by the Medical School Alumni Association at a dinner given in his honor. The establishment was announced of the Robert J. Terry Fund, to be used to provide facilities for the promotion of anatomic research. The portrait was presented by Dr. Louis H. Jorstad, president of the alumni association, and accepted on behalf of the university by Chancellor George B. Throop. Born in St. Louis, Dr. Terry has been head of the department of anatomy at Washington University School of Medicine for thirty-eight years.

William Hale Professor of Bacteriology at Iowa

Dr. William Mason Hale, assistant professor of immunology, Yale University School of Medicine, New Haven, has been appointed professor and head of the department of bacteriology at the State University of Iowa College of Medicine, Iowa City. Dr. Hale graduated at Yale in 1929.

Ten Story Building for New York Medical College

The New York Medical College and Flower Hospital will build and equip at a cost of \$1,500,000 a ten story building in the rear of the Fifth Avenue Hospital within the next fifteen months, according to the *New York Times*. The new building, which will extend through the entire block from One Hundred and Fifth to One Hundred and Sixth Street, will house the college activities at present conducted at Sixty-Fourth Street and York Avenue and also the outpatient service of the Fifth Avenue Hospital. The activities of Flower Hospital were moved to Fifth Avenue Hospital Jan. 1, 1936, when the two institutions merged. The completion of the new building will mark the half way point in the twenty year program announced in 1929 requiring \$19,288,000 and including a 300 bed hospital, new college building, adequate outpatient facilities, a nurses' home, and \$10,000,000 endowment.

Faculty Appointments at Alabama

Dr. Charles Mayo Goss, associate professor of anatomy, Columbia University College of Physicians and Surgeons, New York, has been appointed professor of anatomy at the University of Alabama School of Medicine, University, according to an announcement from the dean, Dr. Stuart Graves. He succeeds Dr.

Philip B. Armstrong, who has been made head of the department of anatomy at Syracuse University of Medicine, Syracuse, N. Y. Dr. Austin L. Joyner, assistant in bacteriology and pathology, Rockefeller Institute for Medical Research, has been appointed to succeed Dr. Herbert K. Fidler, instructor in bacteriology and pathology, who has accepted an appointment in surgery at the Royal Victoria Hospital, Montreal, effective July 1. Dr. Stuart A. Peoples, assistant professor of pharmacology, University of Louisville School of Medicine, Louisville, Ky., has been named assistant professor of physiology and pharmacology, filling the vacancy left when Dr. John H. Ferguson resigned last year to become assistant professor of pharmacology at the University of Michigan School of Medicine, Ann Arbor.

Changes in the Faculty at Yale

The following promotions, among others, at Yale University School of Medicine, New Haven, have been announced:

Dr. Norton Canfield to associate professor of otolaryngology.
Dr. William J. German Jr. to associate professor of surgery.
Dr. Lewis Chandler Foster to associate clinical professor of surgery.
Dr. Simon B. Kleiner to associate clinical professor of surgery (proctology).
Dr. Denis S. O'Connor to associate clinical professor of orthopedic surgery.
William U. Gardner, Ph.D., to research associate in anatomy.
Leonell C. Strong, Ph.D., to research associate in anatomy.
Gertrude van Wagenen, Ph.D., to research associate in obstetrics and gynecology.
Dr. Alexander L. Bassin to assistant professor of orthopedic surgery.
Dr. Arthur J. Geiger to assistant professor of medicine.
Dr. Robert M. Thomas to assistant professor of pathology.
Leslie F. Nims, Ph.D., to assistant professor of physiology.
Theodore C. Ruch, Ph.D., to assistant professor of physiology.
Dr. Bernard S. Brody to assistant clinical professor of surgery (neurology).
Dr. Louis N. Claiborn to assistant clinical professor of surgery.
Dr. Michael D'Amico to assistant clinical professor of radiology.
Dr. Theodore S. Evans to assistant clinical professor of medicine.
Erik Homburger to research assistant in psychiatry and mental hygiene (psychoanalysis) with rank of assistant professor.

New appointments include Dr. Harlan B. Perrins as associate clinical professor of obstetrics and gynecology; Dr. Ernest J. Caulfield, lecturer in clinical pediatrics with rank of assistant clinical professor; Mr. James A. Hamilton, lecturer in hospital administration with rank of associate professor, and Kurt Gunter Stern, Ph.D., research assistant in physiologic chemistry with rank of assistant professor. Mr. Hamilton has recently been appointed superintendent of the New Haven Hospital. Dr. Caspar Greene Burn has resigned as assistant professor of pathology.

Neuropsychiatry at Washington University, St. Louis

Three professors have been appointed, each of whom will direct a division of a new department of neuropsychiatry at Washington University School of Medicine, St. Louis. Dr. David M. Rioch, assistant professor of anatomy at the Harvard Medical School, will become professor of neurology and administrative head of the department at Washington University; Dr. John C. Whitehorn, director of the laboratories at McLean Hospital, Boston, will become professor of psychiatry; Carlyle F. Jacobsen, Ph.D., assistant professor of psychology at the Cornell University Medical College, New York City, will become professor of medical psychology. Members of the present staff will continue their work in the department. The new department of neuropsychiatry has been made possible by a grant of \$150,000 from the Rockefeller Foundation, which is now devoting a part of its resources to a study of nervous and mental disease.

Notable studies have already been made at the Washington University medical school on the mecha-

nism of nervous impulses and the behavior of the nervous system. The school is one of the principal centers for the study of nerve physiology, growing out of work done years ago by Dr. Joseph Erlanger, professor of physiology, and Dr. Herbert S. Gasser, then professor of pharmacology and now director, Rockefeller Institute for Medical Research, New York. Others who have made contributions to the subject from this center have been Drs. George Bishop, James O'Leary, Peter Heinbecker, H. T. Graham, F. O. Schnitt and their associates.

Alumni Reunion at Cincinnati

The University of Cincinnati College of Medicine, Cincinnati, held its annual homecoming and reunion at the Cincinnati General Hospital June 2. The speakers were:

Dr. Mont R. Reid, *The Cost of Temporizing in Acute Appendicitis.*

Drs. Leon Schiff and Max M. Ziminger, *Gastric Hemorrhage.*

Dr. Louis B. Owens, *Treatment of Diabetic Coma in Cincinnati General Hospital.*

Dr. Albert Graeme Mitchell, *Endocrinology in Childhood.*

Dr. Warren F. Draper, assistant surgeon general, U. S. Public Health Service, Washington, D. C., spoke at the banquet on "Highlights of the Year in the Field of Public Health."

The Annual Harvard Seminar

At the forty-first annual meeting of the Associated Harvard Clubs in the Palmer House, Chicago, May 20-22, a medical school seminar was presented. The speakers were:

Dr. Charles Sidney Burwell, dean and research professor of clinical medicine, The Harvard Medical School in 1938.

A. Baird Hastings, Ph.D., Hamilton Kuhn professor of biological chemistry, *Trends in Preclinical Teaching.*

Dr. Walter Bauer, associate professor and tutor of medicine, *The Tutorial System in the Harvard Medical School.*

Dr. Elliott C. Cutler, Moseley professor of surgery, *The Surgical Curriculum Today.*

Dr. Joseph T. Wearin, professor and head of the department of medicine, Western Reserve University, Cleveland.

At a joint luncheon Saturday the speakers included Frederick R. Martin, president, Harvard Club of New York, and William Allen White, editor of the *Emporia (Kan.) Gazette.*

Centennial of Medical College of Virginia

The Medical College of Virginia, Richmond, observed the close of its centennial year with a special program June 7 at which Dr. Henry A. Christian, Hersey professor of the theory and practice of physic, Harvard University Medical School, Boston, was the chief speaker, his subject being "The Lure of Medicine." Delegates were present from many universities and colleges, and a large number of alumni attended. The commencement was held in the evening of June 7, with seventy-six graduates in medicine, sixteen in dentistry, twenty-one in pharmacy and twenty-seven in nursing. J. Rion McKissick, president of the University of South Carolina, was the commencement speaker.

Reunion of Fellows

At a reunion of former fellows of the department of roentgenology at the University of Michigan School of Medicine, April 15, the following returned for the event: Drs. Norman J. Birkbeck of Dayton, Ohio; Roscoe C. Hildreth of Kalamazoo, Mich.; Charles F. Ingersoll of Grand Rapids, Mich.; Bruce W. Stocking of Jackson, Mich.; Frank T. Moore of Akron, Ohio; William A. Irwin of Detroit; Harold Jacob of Pittsburgh; Harry Kok of Benton Harbor, Mich.; Murray Morrison of London, Ont.; John Volderauer of Kalamazoo, Mich., and A. L. Ziliak of Bay City, Mich.

Illinois University Lectures

Dr. Arvid Lindau, professor of general pathology and bacteriology, University of Lund, lectured at the University of Illinois College of Medicine recently on "Pathogenesis of Peptic Ulcer"; this was one of the Swedish Tercentenary Lectures sponsored by the American Scandinavian Foundation. These lectures are being given in the United States during the academic year 1937-1938 in celebration of the 300th anniversary of the founding of New Sweden, the first colony established on the Delaware. Wendell M. Stanley, Ph.D., of the Rockefeller Institute, New York, discussed "Recent Advances in the Study of Viruses" at the college recently; the lecture was under the auspices of the National Society of Sigma Xi. Maud Slye, Ph.D., lectured at the college April 27 under the auspices of Alpha Omega Alpha, on "Studies in Cancer."

Pennsylvania Undergraduate Meeting

The thirtieth annual meeting of the Undergraduate Medical Association of the University of Pennsylvania was held April 20. Dr. William Pepper, dean of the school of medicine, presided and addresses were made by Drs. Isidor S. Ravdin on "The Changing Status of Surgery"; John M. T. Finney, Baltimore, "The Human Element in Medicine," and Francis Peyton Rous, New York, "The Long View: A Commentary on Cancer Research." Fourteen students presented papers.

West Virginia University News

Dr. Joseph Erlanger, professor of physiology, Washington University School of Medicine, St. Louis, addressed the faculty and students of the West Virginia University School of Medicine, Morgantown, recently on "The Electrical Activity of Single Nerve Fibers."

Gold Medals for Valedictorians

The Council of the Philippine Islands Medical Association has recently decided to award a gold medal and a diploma of honor to the valedictorian of the graduating class of every college of medicine in the Philippines that is recognized by the government. The awards will be presented by the president of the association at the commencement exercises.

Higher Entrance Requirements at Syracuse

The trustees of Syracuse University at a meeting in June increased the minimum requirements for entrance to the college of medicine from two to three years of liberal arts studies. Practically all students in the past several years have had at least three years in a liberal arts college, it was announced.

Course in Necropsy Technique

A course in forensic medicine will be established at the University of the Philippines School of Hygiene and Public Health to teach students the medicolegal duties of health officials. The course will include training in necropsy procedure and reports, each student being required to perform not less than twelve necropsies.

Wisconsin Personal

John A. Gallogly, Milwaukee, has been appointed editor of the *Marquette Medical Review* for the year 1938-1939. This periodical is published quarterly by the students of the medical school.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 111, No. 5

COPYRIGHT, 1938, BY AMERICAN MEDICAL ASSOCIATION
CHICAGO, ILLINOIS

JULY 30, 1938

POSSESSIONS, FUNCTIONS AND NEEDS OF A SCIENTIFIC SOCIETY

CHAIRMAN'S ADDRESS

PARKER HEATH, M.D.

DETROIT

It is proposed to discuss a scientific society, and the Section on Ophthalmology in particular, under three headings, possessions, functions and needs.

◆ POSSESSIONS

The permanent possessions of a scientific society are its great names and its literature. In a historical sense they form our immortality, men and literature against the erosion of time. Before our great names let us pause in respect, that "company of men whose thoughts made our thoughts, and whose ways made our ways—the men who first dared to look on nature with the clear eyes of the mind" (Osler). Our records now form many volumes. In them we see clearly the courage and energy of pioneering. A certain empty elegance appears here and there, but work of permanent worth and secure merit is well rooted. The section, with its large democratic membership, has a creditable literature.

I now consider another possession of a scientific body, namely its fine principles of the spirit. We modify our way more by moral than by intellectual education. The calling of a physician compasses the cool logic of science and the warm feelings of the heart. Indeed it is rational to speak of the morality of science. The search for these high principles and high motives is a difficult project. This is true with section members because they have the human characteristic of veering away from expressing lofty sentiment, even though the very principles they live by are involved. We feel that real worth is rarely on parade. It is common knowledge that partial falsification infects public acts and records. To complete our search successfully would require unusual material, such as that found in a complete file of diaries. And a master historian with "a gift which is noble beyond all others"—to be born impersonal—would be as necessary as the diary material.

In digging through this material the historian would find ideas, impressions, imaginations and objective relations noted between events and peoples, some concerned with manipulating personality, others with the panorama of life. Some follow the calculating aphorisms of Gratian, others live compartmentalized as recommended by Osler, while the largest group, made up of most of

us, travel the unplanned amorphous way. Out of the blur and shapelessness would arise form, design and pattern of the medical way of life. The precious material found consists of the guiding principles, often unrecognized, which direct, shape and give the satisfactions of life. These qualities may be incompletely listed: The pleasure and success of perseverance of work. Understanding of the value of time, not as an excess of noble work, nor as stupid drudgery. The far reaching powers and virtues of kindness and patience. The grain of dementia which makes joy in originating and the improvement of talent. Yes, the wisdom of economy. The dignity and worth of simplicity and character. The immortal quality of courage—especially the courage of the spirit. The far and high reaching influence of example. The triumph of truth. These may be part of both the common satisfactions of the daily job and the stir to more knowledge and higher standards. These possessions motivate our colleagues and drive them to high attainment. A long list could be made of items concerned with the spirit. The acceptance of high aims by a scientific society activates it. The scientist contributes to humanity by finding facts and creating his sort of an ethical discipline. The possessions of our society are great names, literature and acceptance of high obligations.

FUNCTIONS

The functions of a scientific body are to endow life with new discoveries and powers. Our open program offers opportunity to disseminate the new, revise the old and stress the current trends. Meetings of national standard, entrance to literature, scientific exhibits and correlations, and grants for investigation support these functions. We can help to disentangle overorganized medical structure, render unnecessary accessory groups. Overorganization is a sign of subfunction. Our section personnel is largely those on the firing line: Those who practice the doctor-patient relationship. We must represent and offer something to cheer our fellows caught in the load of daily work accumulating to crush. The inertia of those stay-at-homes who should be here is a challenge to us. Ophthalmology, medicine's elder daughter, is inescapably caught in those volcanic mutterings affecting state and nation. In these times we see the greatest proclaimers of liberty become its greatest enslavers, and practical politics and propaganda at the farthest swing from statesmanship and responsibility. In all the confusion we must tilt a lance against deceit, to recall the straggler, refresh the outworn, inspire the brave. Medicine's problems are ours and will be solved by the same formulas. Members of a medical society have, therefore, a dual obligation: to sustain

and add to our heritage of scientific truth and to treat the sick, the essence of our calling. We all share in this common obligation. Each must in his own way with tender or rough eloquence make return.

NEEDS

What of our needs? They may govern us. Mel-
lowed experience tells us there is no rest from the
world's buffets. Ophthalmology needs constant field
work to broaden and refresh anew knowledge of her
worth to the profession and by her worth to the public
at large. This, I emphasize, is always in order. We
cannot relax from this. For short intervals only may
we twang the romantic string. Our American Medical
Association is a democracy and has the advantages and
defects of this form of government. Our medical
commonwealth needs individual interest and activity to
be the best form of government. Our section's life
blood is the program; better quality will come from
more flexibility in arrangement. We should reshape
more and cling less to the A. M. A. section structure.
The Scientific Exhibit is a unique part of our program.
Its possibilities for use as a postgraduate teaching
vehicle are only started. The high qualities of our
journals entitle them to the comfort and security of
larger circulation. Such support will mutually reward.
A real need exists for ampler abstracts in English of
the world's ophthalmic literature. The benefits from
literature to doctor and patient through study groups,
seminars and staff meetings are brought about by
discipline and rigorously ordered study. Basic and
clinical investigation replenish the torch of science. We
need institutions whose dominate note is investigation,
where the routine clinical side is permanently kept in
the background. Basic sciences in most institutions are
waived aside for the clinical. For most of us the direct
problems of caring for the sick come first.

Ophthalmic physiologic investigations need emphasis.
Funds are often necessary to activate research programs.
So blood and nervous fiber must be drawn on for the
added task of solicitation of such funds. The section
Knapp Fund needs continued support in this field. It
may be said that the training of ophthalmologists is too
exclusively clinical. This is easily illustrated. A chief
by-product of physiologic optics is refinement in refraction.
Physiologic optics is critically underemphasized.
And, strange to relate, the theory and technic of oph-
thalmic surgery are not widely available to the graduate
student. The principle of continuing education—adult
education—needs sustained stimulation. The educa-
tional methods toward this need may be carried out in
our most widely distributed centers of medical teaching,
the general hospital. Inspired teachers are not essential
even if they were available. What is needed is method:
a program of a full outline of study. Our American
Board has successfully initiated a new approach to an
old problem. Its base is now broad enough to raise its
and our standards of what constitutes an ophthalmolo-
gist. Our entire field needs a fresh understanding of
what we can and cannot do. This will be built on
experience of the past in the light of present knowledge.
With reverence for our rich possessions, let us look
hopefully to the future. May we administer our
worthy functions with humility, governed by our chief
need—the search for truth.

1553 Woodward Avenue.

BERIBERI IN ALCOHOL ADDICTS

NORMAN JOLLIFFE, M.D.

AND

ROBERT GOODHART, M.D.

NEW YORK

Vitamin B₁ deficiency is now more frequently con-
sidered in this country as a factor in the production and
aggravation of cardiovascular disease than formerly;
this is a logical development from the recognition
that this deficiency is not rare in the United States.
The cardiovascular disturbances in beriberi are well
known and are described wherever the disease is
observed, whether in the Orient or in the Occident and
whether in prison or asylum outbreaks, in sailors or
in the sporadic cases heretofore identified. The cause
of beriberi has been accepted as vitamin B₁ deficiency
since Vedder's¹ monograph in 1913. It is now recog-
nized that this deficiency has the decisive role in the
production of many forms of neuritis variously described
in this country as "toxic," "cachectic," "infectious,"
"metabolic," "gestational" and "alcoholic." Alcoholism
is common in this country, accounting for 11.2 per cent
of 101,462 first admissions to 472 mental hospitals in
1935.² In addition, general hospitals in large cities
care for considerable numbers of alcohol addicts, most
of whom do not have mental symptoms requiring pro-
longed hospitalization. For example, the alcoholic
wards of Bellevue Hospital alone recorded an average
of 7,500 admissions per annum during the period from
1902 to 1935 inclusive.³ Alcohol addicts, because much
of their caloric need is satisfied by vitamin-free alcohol,
consume an inadequate amount of many of the essential
elements of nutrition. Because of the scant storage of
vitamin B₁, deficiency in this vitamin quickly leads to
clinical signs. In our experience alcohol addicts as a
rule show evidence of vitamin B₁ deficiency prior to
showing clinical evidence of deficiency in the other
vitamins. It is true that the Wortises and Marsh⁴
found vitamin C unsaturation to be extremely common
in association with the alcoholic psychoses in the
Bellevue material. However, we have no record of
clinical scurvy in an alcohol addict who did not have, in
addition, polyneuritis. Of the last sixty pellagrins
studied on this service, all but five had polyneuritis.
The incidence of vitamin B₁ deficiency as evidenced by
polyneuritis in the alcohol addict is remarkably high.
Romano⁵ found that 58 per cent of 131 alcoholic addicts
admitted to Colorado Psychopathic Hospital presented
evidences of neuritic involvement. Using his criteria
we⁶ found that 61.6 per cent of 1,000 consecutive male
patients admitted to the alcoholic ward of Bellevue
Hospital in the fall of 1935 had polyneuritis. According
to our⁷ minimum criteria, one third of Romano's and
22.6 per cent of our patients had definite polyneuritis.
However, only 38.4 per cent of our group showed no
signs at all of involvement of peripheral nerves.

From the Departments of Medicine and Psychiatry, New York Univer-
sity College of Medicine, and the Psychiatric Medical Service of the
Third (New York University) Medical Division, Bellevue Hospital.

1. Vedder, E. B.: Beriberi, New York, William Wood & Co., 1913.
2. Miles, W. R.: Psychological Factors in Alcoholism, *Ment. Hyg.* 21: 529 (Oct.) 1937.
3. Jolliffe, Norman: The Alcoholic Admissions to Bellevue Hospital. *Science* 83: 306 (March 27) 1936.
4. Wortis, Herman; Wortis, S. B., and Marsh, F. I.: Vitamin C Studies in Alcoholics, *Am. J. Psychiat.* 94: 891 (Jan.) 1938.
5. Romano, John: Deficiency Syndromes Associated with Chronic Alcoholism, *Am. J. M. Sc.* 194: 645 (Nov.) 1937.
6. Jolliffe, Norman, and Frank, Paula: Unpublished observations.
7. Goodhart, Robert, and Jolliffe, Norman: Effects of Vitamin B (B₁) Therapy on the Polyneuritis of Alcohol Addicts, *J. A. M. A.* 110: 414 (Feb. 5) 1938.

Since the polyneuritis of the alcohol addict and of beriberi are identical (as to cause, clinical course and pathologic changes), and since cardiovascular disturbances are prominent in the disease labeled beriberi, one would expect to find in alcohol addicts the cardiovascular disturbances described as occurring in patients with beriberi in other parts of the world. That these disturbances occur is indicated by the reports of Jones and Sure⁸ and Weiss and Wilkins.⁹ The latter authors reported that cardiovascular disturbances due to vitamin B₁ deficiency occur in about one of every 160 persons admitted to two of the medical services of Boston City Hospital. They pointed out that, while the clinical picture is extremely variable, the cardiovascular disturbances correspond in many respects to those described in the beriberi heart of the Orient. The majority of their patients were "heavy consumers of alcohol" who had cardiovascular disturbances of varying severity which could not be ascribed to the usual etiologic factors. The majority of their patients presented other manifestations of a nutritional deficiency, but in some instances "circulatory failure was the sole manifestation." In a study limited to alcohol addicts, however, we¹⁰ found that about one third of sixty-five subjects having polyneuritis demonstrated clinically some degree of cardiovascular disturbance secondary to vitamin B₁ deficiency. On the other hand, evidences of cardiovascular dysfunction were minimal in alcohol addicts who showed none of the stigmas of alcohol addiction (e. g., polyneuritis, alcoholic encephalopathy, Korsakoff's syndrome, pellagra, cirrhosis of the liver). Depending on which symptom is the most prominent, Keefer¹¹ has classified beriberi as (1) neuritic, (2) edematous, (3) cardiac and (4) mixed, the latter type being the most frequent. In a previous study we¹⁰ indicated that all these types are observed in the Bellevue material. Since the neuritic type has been adequately described by many observers, we will in this communication describe by illustrative cases the clinical aspects of the remaining three types.

REPORT OF CASES

CASE 1.—A white man aged 48 (who for years had been a heavy consumer of alcohol) was admitted on July 6, 1936, to a surgical division of Bellevue Hospital because of severe abdominal pain. Nine months previously he had had a gastroenterostomy performed because of a peptic ulcer. He had adhered strictly to his postoperative ulcer diet for the first five months, at the end of which time he disregarded instructions and lived chiefly on beer and whisky obtained during his work as a sorter of "empty" whisky bottles. The epigastric pain of which he complained began shortly after he broke his diet, becoming more severe about one week before admission. At the same time he noted shortness of breath, which was not associated with orthopnea, edema or palpitation. Three days before admission, nausea and vomiting developed. When admitted to the surgical service he was acutely and seriously ill, tachypneic (rate, 42 per minute), with cyanosis of the finger nail beds. The pulse rate was 98, the temperature 97 F. and the blood pressure 90 systolic, 60 diastolic. The veins of the neck were not distended, the lungs were clear, the liver was not palpable and there was no edema. The heart showed no

clinical evidence of enlargement, the rhythm was regular and no murmurs or thrills were detected; the second pulmonic sound equaled the second aortic sound. Examination of the urine gave essentially negative results. The leukocyte count was 7,500, with a normal differential formula. As the patient showed rigidity and in the epigastrium and right upper quadrant direct and rebound tenderness, he was observed for a perforating peptic ulcer. He was given nothing by mouth. In the first twenty-four hours he received by intravenous infusions 3,000 cc. of 5 per cent dextrose solution in physiologic solution of sodium chloride. The following day, July 7, the abdominal signs were minimal but the liver was palpable three fingerbreadths below the costal margin and some edema of the lower extremities was noted. The blood pressure was 98/58. From this time until he was transferred to this service, when the abdominal symptoms had entirely subsided, the patient received alternately at hourly intervals 1 ounce (30 cc.) of peptonized milk or tap water. During this period mental symptoms were noted, and after a consultation he was transferred on July 11 to the medical service of the psychiatric division.

When admitted to this service he was confused, disoriented, dyspneic and orthopneic but not cyanotic. There was no evidence of sclerosis of the peripheral vessels, and retinoscopic examination gave normal results. There were no distended or pulsating veins in the neck. The lungs were clear throughout. The cardiac apex was diffuse, and the point of maximum intensity could not be localized. The heart sounds were of a poor quality; the second aortic sound was greater than the second pulmonic sound. There were no murmurs or thrills. The ventricular rate and the pulse rate were equal, at 90 per minute. The blood pressure was 106/68. Pitting edema involved the lower extremities, sacrum and genitalia. During the following six days the patient was given our basal diet,¹² with fluids restricted to 1,000 cc. daily, and absolute bed rest was maintained. The edema of the lower extremities, sacrum and genitalia continued to increase, although the dyspnea and orthopnea disappeared.

An electrocardiogram and a teleroentgenogram of the heart had been taken on July 8. The electrocardiogram showed an inverted T wave in lead 3. The roentgenogram revealed that the heart was diffusely enlarged in all diameters. The borders of the heart were straight. An electrocardiogram on July 15 revealed right axis deviation, and tracings of six precordial potentials revealed an inverted T wave at point V5 (located at the level of the fifth rib in the left anterior axillary line) as the only abnormal feature. The blood pressure was now 140/98 and the weight 139½ pounds (65 Kg.). Two urinalyses done during this period gave negative results as to albumin and sugar. The specific gravity was 1.018 and 1.013. The temperature was never above 100 F. The serum albumin-globulin ratio varied from 3:2.6 to 3.2:2.7. The red blood cell count was 3,700,000 per cubic millimeter and the hemoglobin content 8.7 Gm. per hundred cubic centimeters.

As the patient's weight was increasing and edema advancing in spite of bed rest and restricted fluid intake, the regimen was changed on July 18. The same diet was used but was supplemented by 18 Gm. of vegex¹³ and 2 mg. of thiamin chloride¹⁴ (crystalline vitamin B₁) taken by mouth. The daily intake of vitamin B₁ was estimated as 3.01 mg. of thiamin chloride (1,053 international units) and the vitamin B₁/calory ratio¹⁵ as 8.4 (approximately five times the patient's predicted requirement of vitamin B₁) as judged by Cowgill's prediction formula. Absolute bed rest was discontinued and fluids were not restricted. Three days after the institution of this regimen the liver was no longer palpable and the patient began to lose weight. An electrocardiogram taken on July 24, the seventh day of this regimen, revealed disappearance of the right axis deviation and the development of inverted T waves in all three leads. A roentgenogram at this time showed moderate enlargement of the heart in all diameters. The blood pressure was 134/96. The patient continued to lose weight until the

8. Jones, W. A., and Sure, Barnett: The Role of Vitamin B₁ in Cardiovascular Diseases: Preliminary Report, *J. Lab. & Clin. Med.* 22: 991 (July) 1937.

9. Weiss, Soma, and Wilkins, Robert W.: The Nature of the Cardiovascular Disturbances in Vitamin Deficiency States, *Tr. A. Am. Physicians* 51: 341, 1936; The Nature of the Cardiovascular Disturbances in Nutritional Deficiency States (Beriberi), *Ann. Int. Med.* 11: 104 (July) 1937.

10. Goodhart, Robert, and Jolliffe, Norman: The Role of Nutritional Deficiencies in the Production of Cardiovascular Disturbances in the Alcohol Addict, *Am. Heart J.* 15: 569 (May) 1935.

11. Keefer, C. S.: The Beriberi Heart, *Arch. Int. Med.* 45: 1 (Jan.) 1930.

12. Jolliffe, Norman, and Cellert, C. N.: The Etiology of Polyneuritis in the Alcohol Addict, *J. A. M. A.* 107: 642 (Aug. 29) 1936.

13. Supplied by Vegex, Inc., New York.

14. "Betabion," supplied by Merck & Co., Rahway, N. J.

15. Cowgill, G. R.: The Vitamin B Requirement of Man, New Haven, Conn., Yale University Press, 1935.

twenty-second day of this therapy (August 10), at which time he weighed 112 pounds (51 Kg.) and was entirely free from edema; his blood pressure then was 124/94. There were no clinical signs of diminished cardiac reserve. He had no complaints referable to his gastrointestinal tract, and his appetite was excellent. The red blood cell count was now 4,300,000 per cubic millimeter, and the hemoglobin content was 15 Gm. per hundred cubic centimeters. The serum albumin-globulin ratio was 3.3:2.6. An electrocardiogram revealed no deviation of the electrical axis. The T wave was low in lead 1, low to diphasic in lead 2 and inverted in lead 3. A roentgenogram of the heart on August 7 revealed a cardiac shadow whose size and shape were within normal limits. At no time during his stay in this hospital did the patient show evidence of polyneuropathy.

On August 28 the patient was transferred to a state hospital for mental disease because of the persistence of memory defects and confabulation. The final medical diagnosis was beriberi with recovery.

CASE 2.—A white man aged 40 was brought to this hospital by ambulance on Aug. 28, 1936. His wife stated that he had been a periodic beer drinker all his adult life but began to drink whisky heavily and daily in January 1936. In June he became weak and tremulous, and pains developed in his legs. Because of these symptoms he discontinued drinking whisky, reverting to beer, which he drank throughout the day, ingesting practically nothing else. For three days before admission he had been lying on the floor of his apartment because of inability to use his legs.

When admitted to the medical service of the psychiatric division he appeared well developed and nourished but he was confused, disoriented and semistuporous. He was not dyspneic, orthopneic or cyanotic. There were no dilated veins in the neck. Pitting edema involved the lower extremities and the sacrum. The cardiac apex could not be localized. The sounds were of good quality. The aortic second sound was greater than the pulmonic second sound. There were no murmurs. There was a regular sinus rhythm at a rate of 92 per minute. The blood pressure was 126 systolic, 96 diastolic. The liver and spleen could not be felt. Neurologically he showed bilateral nystagmus and severe peripheral neuritis, as manifested by bilateral wrist and foot drops, absence of ankle and knee jerks and absence of biceps and triceps jerks. Because of the patient's mental condition the sensory status could not be determined. There was, however, marked cutaneous hyperesthesia in all extremities and tenderness in the calf muscles, and even in the presence of edema atrophy of the calf muscles was noted.

As the patient appeared to be in a critical condition, a control period of bed rest and a diet of borderline adequacy in vitamin B₁ were not instituted. He was immediately given a weighed diet rich in vitamins, with a supplement of 18 Gm. of vegex and 24 mg. of thiamin chloride by mouth daily. In addition, 10 mg. of thiamin chloride was administered daily by intravenous injection. This regimen supplied an intake of about 37 mg. of thiamin chloride (12,300 international units). The vitamin B₁/calory ratio was about 80, or approximately forty times his predicted maintenance requirement.¹⁶

An electrocardiogram taken on the third day after the institution of this therapy showed a diphasic T wave in lead 3. The ventricular and the auricular rate were 70. The relations of the ventricular systole to the entire cardiac cycle as expressed by the constant K of Cheer and Dieuaide¹⁶ was 0.4248. A teleroentgenogram of the heart could not be obtained at this time, as the patient was too ill. The red blood cell count was 4,740,000 per cubic millimeter, with 15.1 Gm. of hemoglobin per hundred cubic centimeters. The serum albumin-globulin ratio was 3.0:2.2. There was no retention of bromsulphalein at the end of thirty minutes.

The first sign of improvement was disappearance of the wrist drop on the seventh day. On the fourteenth day the edema had markedly decreased to only slight pitting over each tibia. At this time the serum albumin-globulin ratio was 3.6:3.1; the blood pressure was 145/115. The patient was now able to move his legs. Coincidentally with this improvement, the patient

became very restless in bed. With this mild activity a markedly labile pulse, dilated and pulsating cervical veins and accentuated carotid pulsations developed, though at no time was he dyspneic or orthopneic at rest. An electrocardiogram taken on the twenty-fifth day revealed a diphasic T wave in lead 3, left axis deviation and sinus tachycardia at a rate of 125 per minute. The constant K was equal to 0.4556. A teleroentgenogram showed minimal enlargement of the cardiac silhouette. The venous pressure at this time was 4.5 cm. of water (right arm), the circulation time being 6.5 seconds.

On the thirty-first day the rapid and labile pulse and the abnormal cervical pulsations had disappeared, but slight pitting edema remained over each tibia. The serum albumin-globulin ratio was 3.6:2.8. Teleroentgenographic examination now revealed that the size and the shape of the heart were within normal limits. An electrocardiogram showed an inverted T wave in lead 3, left axis deviation and a decrease in the value of K to 0.3429. There was a regular sinus rhythm at a rate of 100 per minute.

Because of the persistence of mild peripheral edema the patient was now rapidly digitalized. There was no demonstrable change in the degree of edema, no increase of urine output and no decrease in weight. The administration of digitalis was discontinued at the end of eight days.

On the thirty-ninth day after the institution of vitamin therapy the patient was transferred to a state hospital for mental disease because of the persistence of mental symptoms. Traces of edema over the lower one third of each tibia were still present. The blood pressure was 130/90. Neurologically he was much improved. The wrist drop was gone and the biceps and triceps jerks had returned, but the knee jerks and ankle jerks remained absent. The tenderness in the calf muscles and the cutaneous hyperesthesia had disappeared. Because of the patient's mental condition, his sensory status could not be more completely determined. The final medical diagnosis was beriberi, improved.

CASE 3.—A white man aged 51 was admitted to this hospital on Aug. 21, 1936, because of diarrhea of eight days' duration. For the past month he had drunk at least 1 quart (liter) of whisky daily and eaten only about every third day. The food intake was limited to soup, stew or a sandwich. Eight days prior to admission severe nonbloody diarrhea and attacks of vomiting had developed; at about the same time he had noted swelling and purplish discoloration of the backs of his hands and swelling of his hands and feet. He had not noted palpitation, orthopnea, dyspnea or precordial pain.

When admitted, the patient was in no acute distress but appeared chronically ill. He was clear mentally. There was no stomatitis. The chest was clear. The heart sounds were of poor muscular quality, with a booming first sound at the apex. There were no murmurs. The rhythm was regular at a rate of 100 per minute. The abdomen was normal except for a palpable and tender liver four fingerbreadths below the costal margin in the midclavicular line. There was a weeping ulcerous lesion 2½ inches (6 cm.) in diameter on the dorsum of each hand, surrounded by an area of erythema. Marked pitting edema was present over the feet and legs below the knees. The signs of peripheral neuritis were tenderness in the calf muscles, cutaneous hyperesthesia limited to the soles of the feet and absence of vibratory sensation in the toes. The deep reflexes were intact. The blood pressure was 138/100. Repeated urinalyses and microscopic examination did not show albumin. The serum albumin-globulin ratio was 4.3:2.2. The Wassermann reaction of the blood was negative. A teleroentgenogram revealed no evidence of cardiac enlargement. An electrocardiogram showed a regular sinus rhythm at a rate of 90 per minute, depression of the ST segments in leads 1 and 2 and diphasic T waves in all three leads. The basal metabolic rate, determined one week after admission, was plus 14 per cent.

Immediately on admission to this service the patient was given a diet inadequate in Goldberger's pellagra-preventive factor and in vitamin B₁, supplemented daily by 25 Gm. of vitamin-free casein, 20 mg. of ascorbic acid and two tablespoonfuls of cod liver oil. Absolute bed rest was instituted. On the fifth day of this regimen the pellagrous lesions on the hand

16. Cheer, S. N., and Dieuaide, F. R.: Studies of the Electrical Systole (O-T Interval) of the Heart: Its Duration in Cardiac Failure, *J. Clin. Investigation* 10: 889 (Oct.) 1931.

were dry and healing and the peripheral edema had disappeared, but there was no change in the size of the liver and the diarrhea continued. To test the effect of mild activity the patient was then allowed out of bed; there was prompt recurrence of edema of the ankles and feet. On the fourteenth day of this regimen the diarrhea had ceased and the pellagrous lesions had healed, but the edema of the ankles and feet remained, as did the enlargement of the liver. Pains in his legs and burning sensations in the soles of the feet now developed. An electrocardiogram at this time revealed a regular sinus rhythm at a rate of 90 per minute, with occasional ventricular premature contractions, a depressed ST segment in lead 2, and low T waves in all three leads.

Because of evidences of advancement in the signs of peripheral neuritis and persistence of the edema, use of the Goldberger diet was discontinued after eighteen days, and our weighed vitamin B rich diet, supplemented with 18 Gm. of vegex daily, was substituted. This regimen supplied 3.2 mg. of thiamin chloride (1,065 international units). The vitamin B₁/calory ratio was 6.8, which was about four times the patient's predicted requirement.¹⁵ On the eleventh day of this regimen the edema had disappeared, the liver was palpable only on deep inspiration, and the burning of the feet and pains in the legs had disappeared. An electrocardiogram revealed a low T wave in lead 3 and a regular sinus rhythm at a rate of 90 per minute. The blood pressure was 130/90. The patient was then discharged to his home, with a medical diagnosis of pellagra, cured, and beriberi, cured.

CASE 4.—A well developed, obese man, aged 65, was brought to the hospital by ambulance at 6 p. m. on Dec. 9, 1937, with massive hemoptysis. He was a known alcohol addict with several previous admissions to the alcoholic ward of this hospital. The present admission was after a prolonged alcoholic spree, the last three weeks of which he had passed in bed, in a boarding house, because of inability to walk. During this period he noted dyspnea and the beginning of swelling of his extremities and face. While confined to bed he ate very little and during the last week nothing whatever. During this time he had a daily supply of whisky delivered to him. About six or eight hours before admission, while smoking a cigaret, he was seized with a spasm of coughing, after which he had profuse hemoptysis, which was still present on admission.

When first seen in the hospital he was acutely and seriously ill. He was bleeding profusely from his mouth but was not in shock. His blood pressure was 160/90. Massive edema involved all the extremities, the trunk and the face. There was marked edema of the eyelids. He was not orthopneic but was both dyspneic and cyanotic on the slightest exertion. There were no dilated or pulsating veins in the neck. The carotid pulsations were not accentuated. There were many large moist rales throughout both lungs, with signs of consolidation over the middle lobe of the right lung. The heart sounds were distant, with regular sinus tachycardia at a rate of 140 per minute. The second aortic sound was louder than the second pulmonic sound. There were no murmurs or thrills, the cardiac apex could not be localized. The liver edge was palpable 7 cm. below the right costal margin in the anterior axillary line. The pupils were equal and reacted to light and in accommodation. All the tendon reflexes except the ankle jerks were intact, and there were no other abnormal neurologic signs except severe cutaneous hyperesthesia extending over the soles of the feet and up the legs to the midcalf.

The hemoptysis ceased shortly after admission and did not recur. On the morning following admission the patient appeared dying, with marked dyspnea and cyanosis while at rest but without orthopnea. There were numerous coarse rhonchi throughout both lungs, obscuring any signs of intrinsic pulmonary disease. The blood pressure was 110/100 and remained at about this level until the day of death. He was given at this time 100 mg. of thiamin chloride by intravenous injection. This was repeated on December 11 and 12. Within the next three or four hours he was much more comfortable and was less dyspneic and cyanotic. The next morning (December 11) the edema of the face had almost entirely disappeared, and there was a marked reduction in the edema over the trunk and

extremities. On December 12 the edema was confined to the dependent portions of the back, abdomen and lower extremities. He continued to improve, and by December 13 the liver was no longer palpable. He was given 20 mg. of thiamin chloride by intravenous injection on this day and once daily thereafter. Improvement continued until December 16, at which time he was dyspneic only on effort and the edema was minimal and limited to the lower extremities. Signs of pulmonary congestion were less extensive though still present. The following morning (December 17) his respirations suddenly increased to 36 per minute, with a marked expiratory grunt, and he was moderately cyanotic. There were numerous medium moist rales throughout both lungs. At about 10 a. m. he presented the picture of shock, with a pulse rate of 120 per minute, shallow respirations at 40 per minute and a blood pressure of 66/50. There was no rigidity or tenderness in the abdomen. In spite of supportive measures, the patient died at 2 p. m. on December 17.

Laboratory examinations gave the following results: Analysis of three casual specimens of urine and microscopic examination showed no albumin. The specific gravity was 1.016, 1.015 and 1.030. Examination of the blood on the day of admission showed red cells 4,460,000 per cubic millimeter, with a hemoglobin content of 12.3 Gm. per hundred cubic centimeters. The total leukocyte count was 8,800 per cubic millimeter, with a normal differential formula. The Wassermann reaction of the blood was negative. The blood sugar content was 124 mg. per hundred cubic centimeters, the nonprotein nitrogen content 28 mg., the serum albumin content 3.6 Gm. and the serum globulin content 3 Gm.

A teleroentgenogram of the heart on December 10 showed cardiac enlargement in all diameters. At that time both lung fields showed diffuse pulmonary congestion, with a large area of consolidation in the midportion of the right lung. The roentgenographic examination was repeated on December 15, with essentially the same results.

Electrocardiograms, with the three standard leads, were taken on December 11, 13, 14, 15 and 16. All the tracings were identical, showing as the only abnormality low voltage QRS complexes and T waves in all three leads. These changes may have been secondary to the edema.

Necropsy was performed twenty hours post mortem by Dr. Eugene Clark. The body was that of a moderately well developed adult white man weighing about 185 pounds (84 Kg.) and about 5 feet 10 inches tall (178 cm.). There was a minimal degree of pitting edema of both ankles and at the sacrum. The heart weighed 440 Gm. There was slight dilatation of the left side of the heart but no hypertrophy of any of the chambers. The right ventricular wall measured 4 mm. and the left 17 mm. in thickness. The coronary ostiums were widely patent, and there was no evidence of valvular insufficiency or stenosis. The pulmonic ring measured 7 cm., the mitral 9.5 cm. and the aortic 7 cm. There was slight coronary atherosclerosis. Many sections through all portions of the right and left ventricles failed to reveal any alteration of the myocardial fibers or interstitial stroma. The aorta was inelastic and dilated, measuring 8.5 cm. at its widest portion. There was slight atherosclerosis, with calcification and ulceration.

The lungs showed recent pulmonary infarcts, with patchy alveolar edema and hemorrhage. The kidneys were equal in size and together weighed 340 Gm. The only abnormality was congestion. The liver weighed 1,870 Gm. and showed marked fatty changes and passive hyperemia. The spleen weighed 110 Gm. There were congestion, slight arteriolar sclerosis and focal capsular fibrosis. The pancreas showed diffuse uniform necrosis of all glandular elements, with massive hemorrhagic extravasation into the lobules and into the interlobular and peripancreatic fat. There was no fat necrosis and no cellular reaction.

The final clinical diagnoses were beriberi, pulmonary congestion and infarction, and bronchopneumonia. Additional diagnoses of importance following autopsy were acute hemorrhagic pancreatic necrosis and fatty liver. There was no bronchopneumonia, and there was no positive postmortem evidence by which the clinical diagnosis of beriberi could be confirmed. However, the absence of any pathologically demonstrable cause for circulatory failure is an important factor in confirmation of the clinical diagnosis of beriberi.

COMMENT

These cases illustrate the cases of alcohol addiction observed by us on this service in which there is no history or evidence of previous acute or chronic cardiovascular or kidney disease but in which signs and symptoms of cardiovascular dysfunction are present.

The condition in case 1 we believe to have been analogous to the acute variety of endemic beriberi described in the Orient under the name of "shoshin." This type is described as occurring most frequently in persons whose neuritic signs are so mild that they are able to work or engage in vigorous muscular activity.¹⁷ This activity is thought to precipitate congestive heart failure, often before the neuritis is manifest. In this case the intravenous administration of 3,000 cc. of 5 per cent dextrose in physiologic solution of sodium chloride was probably the precipitating factor. This infusion probably played the same part as exercise in increasing the work of the heart; in addition it furnished 150 Gm. of vitamin-free dextrose to a person whose vitamin B₁ stores were probably exhausted.

It is of interest, as this patient showed no signs of peripheral neuritis, that Birch and Harris¹⁸ found that the heart rate of a hypovitaminotic rat with symptoms of polyneuritic convulsions is generally around 400 per minute, while a rat maintained with a diet completely devoid of vitamin B₁ has a much lower heart rate, about 300 per minute or less, and shows no symptoms of polyneuritis. They concluded that "the biochemical lesion caused by vitamin B₁ deficiency seems to affect the heart almost immediately and may so cause sudden death from heart failure, while its poisoning action on the central nervous system proceeds more slowly."

Case 2 illustrates beriberi of the mixed type. The patient showed severe peripheral neuritis and symptoms of cardiovascular dysfunction referable to both the heart and the peripheral vessels. We believe that the edema was largely of peripheral vascular origin. The relative mildness of the cardiac symptoms, the normal venous pressure and the total failure to respond by improvement to digitalization favor this conclusion. The presence of marked muscular atrophy associated with loss of muscle tonus may have been an additional factor in producing and aggravating edema through the production of local venous and lymph stasis.

The type of cardiovascular disturbance most frequently seen in this clinic in alcohol addicts with dietary deficiencies is illustrated by case 3. When admitted this subject presented no signs or symptoms of cardiovascular disability except marked pitting edema of both lower extremities of eight days' duration and an enlarged liver. The edema rapidly subsided when bed rest alone was maintained and his diet was inadequate in vitamin B₁ and in the pellagra-preventive factor. In the majority of such cases the edema disappears and does not recur when bed rest is discontinued; in this case, however, the edema did recur, only to clear completely and permanently after the institution of vitamin B therapy. There appears to have been a definite dissociation between the cutaneous lesions of pellagra and the peripheral neuritis. The manifestations of cardiovascular disturbance had a closer relationship to the peripheral neuritis than to the cutaneous lesions of pellagra.

Case 4 presents a clinical picture of beriberi of the mixed type very similar to that in case 2. We believe that the results of the postmortem examination strongly support our clinical diagnosis of circulatory failure due to beriberi. Hydropic degeneration, with separation and fragmentation of the muscle fibers of the myocardium, was not demonstrated. Such a picture, however, is not invariably present with beriberi, nor is it confined to this disease. Moreover, this patient had been treated with large amounts of vitamin B₁ and had shown definite signs of improving circulation for several days before death. Under these conditions, changes in the myocardium toward normal may have occurred. The immediate cause of death is not clear. It may be that the general hyperemia of all the viscera, including the pancreas, with the associated increased permeability of the capillaries and transudation of fluid through the vascular walls, was the immediate cause of the acute hemorrhagic pancreatic necrosis observed at autopsy. If this is true, all the pathologic processes present can be included in one disease syndrome, i. e., beriberi.

It is significant that in our alcohol addicts we see all the varieties of cardiovascular disturbances described as occurring in patients in the Orient having beriberi. That the clinical picture is extremely variable or that pure right-sided heart failure is rarely observed is not surprising. For the clinical picture to be uniform would be more surprising in view of the differences in individual size, metabolism, degree of muscular activity, fluid intake and degree of deficiency and in the time element over which these factors operate. Each of these factors is known to play a part in the type of clinical picture which develops in the experimental animal. When several are operating at the same time, and in view of the possibilities for various combinations, one would expect a variable clinical picture.

SUMMARY AND CONCLUSIONS

Types of cardiovascular dysfunction secondary to dietary deficiency are illustrated by four cases reported. Cardiovascular disturbances of this nature are seen in approximately one third of the alcohol addicts admitted to this service who show vitamin B₁ deficiency in the form of peripheral neuritis. The clinical picture presented by our patients is comparable to that of endemic beriberi in the Orient. The cardiovascular disturbances probably represent manifestations of vitamin B₁ deficiency, and the clinical picture produced is that of beriberi.

Proteins and Amino Acids.—Since 1900 the discovery of more suitable analytical methods has demonstrated that proteins are composed of at least twenty-two amino acids. The amounts and order of combination of these acids vary tremendously in proteins of different sources. Indeed, no two proteins are exactly alike. Their inequalities, even when too slight to be detected by the most refined chemical technic, are readily brought to light by their remarkable specificity in biological reactions. This modern concept of protein structure provides a teleological explanation for the well known fact that compounds of this class, before absorption from the alimentary tract, must undergo complete disintegration into their ultimate "building stones." Since tissue proteins have their origin in dietary proteins, the amino acids of the latter must be liberated before they can be utilized for synthetic purposes. Thus, protein metabolism is a much more complex phenomenon than was originally supposed. Instead of being concerned with a single entity, it involves the functions of each of the amino acids.—Rose, William C.: *The Physiology of Amino Acid Metabolism*, *Proc. Inst. Med. Chicago* 12:98 (April 15) 1938.

17. Inawashiro, R., and Hayasaka, E.: *Studies on the Effect of Muscular Exercise in Beriberi*, *Tohoku J. Exper. Med.* 12:1 (Dec.) 1928.
18. Birch, T. W., and Harris, L. J.: *Bradycardia in Vitamin B₁ Deficient Rats and Its Use in Vitamin B₁ Determinations*, *Biochem. J.* 28:602, 1934.

THE TREATMENT OF SYPHILITIC
PRIMARY OPTIC ATROPHY

JOSEPH EARLE MOORE, M.D.

ALAN C. WOODS, M.D.

H. HANFORD HOPKINS, M.D.

AND

LOUISE L. SLOAN, PH.D.

BALTIMORE

In no phase of the pathology or treatment of syphilis is there so much disagreement as in primary optic atrophy. There is confusion as to the types of neurosyphilis in which primary optic atrophy usually occurs, one group believing it always to be associated with *tabes dorsalis*, another insisting on its frequent association with "basilar meningitis" and assigning a different prognosis from that of tabetic optic atrophy to the latter classification. There is no definite knowledge as to the underlying pathologic changes, one group ascribing the lesion to the direct action of the spirochete on the optic nerve, another to a hypothetic toxin, another to nutritional disturbances of the nerve due to vascular lesions involving its blood supply, and still another to disturbances in the interrelationships of systemic and retinal blood pressure and intra-ocular tension.

In treatment, one large school of thought holds that, while antisypilitic drugs do no harm, they are useless in preventing the development of blindness. Another group still feels that even the trivalent arsphenamines have a direct toxic action on the optic nerve and that their use in primary optic atrophy is absolutely contraindicated. Still another group, convinced that anti-syphilitic treatment is harmful, useless or both, has tried methods of treatment calculated to influence the blood supply of the optic nerves, ranging from such procedures as the retrobulbar injection of atropine to carotid sympathectomy and cyclodialysis.

There is general agreement on only two points:

1. Untreated syphilitic primary optic atrophy always involves both eyes.
2. It always leads eventually to permanent and complete blindness.

The literature on the treatment of primary optic atrophy is for the most part worthless. There is a large number of papers, practically all of which suffer from one or all of three fundamental defects: The number of cases reported is too small to be significant, patients have not been followed for long enough periods of time to justify any conclusions as to outcome, or essential ophthalmologic and neurologic data which justify the diagnosis of syphilitic primary optic atrophy or provide details as to its severity before and after treatment are lacking.

THE MATERIAL OF THIS STUDY

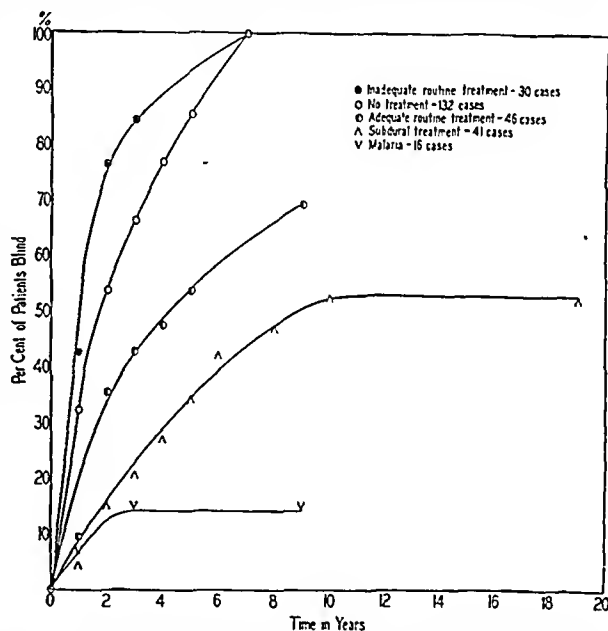
More than ten years ago, the Syphilis Division and the Department of Ophthalmology of the Johns Hopkins Hospital became interested in the joint cooperative study of syphilitic primary optic atrophy. We are reporting the results of treatment in 191 cases. These are drawn from a much larger material of some 450 cases, the majority of which were discarded because of diagnostic study too incomplete to insure differentiation between primary and secondary optic atrophy, or, if certainly primary, to insure that syphilis and not

some other condition was the cause, or because of complicating ophthalmologic features such as extensive chorioretinitis, cataract, glaucoma or possible trypanamide or alcohol amblyopia. The 191 cases available for study were all personally observed and are indubitable examples of ophthalmologically uncomplicated syphilitic primary optic atrophy.

In this paper we shall consider only the outcome of various forms of treatment in broad general terms; the details of this and of various other points will follow in a later communication.

THE COURSE OF UNTREATED OPTIC ATROPHY

While there is general agreement as to the fact that untreated primary optic atrophy inevitably leads to permanent and complete blindness, the literature lacks definitive statements as to the usual average duration of the process from onset of symptoms to blindness. It is an old observation that the course of untreated optic atrophy is variable and that the interval from onset to blindness may range from as little as one month to as



The cumulative percentage of blindness in patients with syphilitic optic atrophy untreated and those treated by various methods (see text and table 2 for methods of deriving curves). The curves are smoothed by hand. In view of the relatively small number of cases involved, these curves should be interpreted as representing comparative trends rather than absolute statistical accuracy.

long as twelve years. Utilizing the life table statistical method to estimate the progress of untreated optic atrophy in sixty-five of our own patients who received no treatment at any time from onset of symptoms to our final observations and in sixty-seven others from onset to the institution of one or another type of treatment, we find that blindness may be expected to occur in 32 per cent within one year, in more than half within two years and in more than 75 per cent within four years, and all except the rare patient with unusually slow progression is blind by the end of the seventh year, as shown in the accompanying chart.

THE STANDARD OF OUTCOME OF TREATMENT

For purposes of analysis, blindness in both our untreated and our treated patients is defined as central visual acuity of 10/200 or less in the better eye. To be regarded as successful, any form of treatment must delay the development of blindness in a significant pro-

portion of cases or prevent it beyond the seventh year or, when the atrophic process begins as monocular, prevent the onset of atrophy in the uninvolved eye.

SELECTION OF MATERIAL

Though patients with optic atrophy cannot be definitely separated into groups with rapid and slow progression, it is certainly true that in some patients the process proceeds toward blindness relatively slowly even in the absence of treatment, while in others blindness supervenes so rapidly that no time is permitted for

TABLE 1.—*Evaluation of Treatment*

Inadequate routine treatment.....	30 cases
Adequate routine treatment.....	46 cases
Subdural treatment	41 cases
Malaria treatment	26 cases

the effect of treatment, if any, to become apparent. Some of our untreated patients were therefore not treated because there was literally no time for treatment. Our groups of treated patients, on the contrary, contain at least a proportion in whom progress was relatively slow and time for treatment was therefore available. In this sense an unconscious selection of patients is inevitable, those with the best original prognosis being chosen for treatment, and our comparative results must be interpreted in this light.

TABLE 2.—*The Cumulative Percentage of Blindness in Untreated Patients with Syphilitic Primary Optic Atrophy*

Year	Time Period	$1x$ Number Patients at Beginning of Time Period $x \dots$	Wx Withdrawn from Observation During Time Period $x \dots$	$Lx = (1x - \frac{Wx}{2})$ Average Number Patients Observed During Time Period $x \dots$	Bx Number Patients Who Became Blind During Time Period $x \dots$	Qx Per Cent Who Became Blind During Time Period $x \dots$	Px Per Cent Who Did Not Go Blind During Time Period $x \dots$	CPx Per Cent Who Did Not Go Blind During Periods $x_1 + x_2 + x_3 \dots$	$CQx \dots = 1 - CPx \dots$ Per Cent Who Became Blind During Periods $x_1 + x_2 + x_3 \dots$
1	x_1	132	53	105.5	34	32.2	67.8	67.8	32.2
2	x_2	45	7	41.5	13	31.3	68.7	46.5	53.5
3	x_3	23	11	19.5	4	36.3	63.7	33.9	66.1
4	x_4	10	1	9.5	3	31.5	68.5	24.2	75.8
5	x_5	6	1	5.5	2	36.5	63.5	14.7	85.3
6	x_6	3	2	2.0	—	—	—	—	100.0
7	x_7	1	—	1.0	1	100.0	—	—	—

The derivatives from the primary figures ($1x$, Wx , Bx) are:

$$Lx = 1x - \frac{Wx}{2} \quad Qx = 100 \cdot \frac{Bx}{Lx} \quad Px = 100 - Qx.$$

METHODS OF TREATMENT

In general, our material is subdivided into six groups, as follows:

1. Sixty-five patients who received no treatment at any time.
2. Twenty-eight patients who received only inadequate routine treatment, arbitrarily defined as less than ten injections of a trivalent arsenical and ten injections of a heavy metal or the equivalent thereof.
3. Thirty-four patients who received adequate routine treatment; i. e., more than ten injections each of an arsenical and a heavy metal.
4. Twenty-eight patients whose treatment was initiated with one or more subdural intraspinal or intracisternal injections of arsphenaminized serum by the Swift-Ellis technic, this form of treatment being either accompanied or followed by routine treatment.
5. Nine patients whose treatment was initiated by induced malaria followed by routine treatment.
6. Twenty-seven patients treated by a combination of two or more of these systems.

From the latter combined group, an appropriate statistical device permits the evaluation of individual treatment methods in a sufficient number of instances to augment the several treatment groups (table 1).

THE DELETERIOUS EFFECTS OF TREATMENT

Our experience indicates clearly (1) that the trivalent arsenical drugs and the heavy metals do not possess any direct toxic affinity for the optic nerve (as do the pentavalent arsenicals; e. g., tryparsamide) and that blindness is not precipitated by standard methods of use; (2) that in about 10 per cent of the patients treated the subdural method does carry a risk of sudden progression of the atrophic process, even to the point of blindness; (3) that if malaria exercises a similar deleterious effect (as is reported by several observers abroad) this must be an uncommon event, since we have not observed an instance in some forty patients so far treated.¹

With few exceptions, we have not used tryparsamide in the treatment of primary optic atrophy because of the previously reported opinion that this drug is contraindicated in the presence of preexisting damage to the nerve.

THE RESULTS OF TREATMENT

The outcome of treatment is presented as a series of curves in the chart, in which the abscissa represents the cumulative percentage probability of blindness and the ordinate the time of observation in years, dating from the onset of symptoms. The statistical method of obtaining these curves is briefly explained as follows:

The observations on the group are converted to terms of life experience, of which the unit is one person under

$$CPx = Px_1 \cdot Px_2 \cdot Px_3 \cdot Px_4 \dots \text{and so on} \quad CQx = 100 - CPx.$$

observation for one year, or one person-year. The procedure to this end, which is an application of the familiar principles of life-table construction, is illustrated in table 2, which shows in detail the summation of life experience of patients with untreated optic atrophy.

The chart indicates that with inadequate routine treatment all patients probably become blind in approximately the same time period as when no treatment is given. With adequate routine treatment, the progress toward blindness seems to be appreciably slowed. Whereas untreated patients are all blind by the end of the seventh year, only 69 per cent of those given adequate routine treatment are blind by the ninth year. If the considerations given here as to selection of material applied uniformly, that rapid progressors may fall in the untreated group and slow progressors in the treated groups, the difference between no treatment and adequate routine treatment would probably be insignificant. A study of individual records suggests, however, that not only may adequate routine treatment delay

1. The majority of these malaria treated patients are not included in the present study, because of inadequate length of post-treatment observation.

the onset of blindness in a fair proportion of cases but also, and particularly if treatment is begun very early, it may occasionally arrest the atrophic process entirely.

There can be no statistical doubt as to the beneficial effect of subdural treatment or malaria. In the case of subdural treatment, the data indicate that by the tenth year only 53 per cent of patients are blind and that if by this time the patient is still not blind the process is probably permanently arrested. This satisfactory result is observed in spite of the fact that in four of the forty-one cases represented in this curve blindness was apparently precipitated by treatment.

With induced malaria the results are apparently even better, although the number of cases represented is too small for certainty. Within three years 14.6 per cent of the patients treated are blind, but thereafter the curve is completely flat.

A study of individual case records confirms the fact that the progress of primary optic atrophy may be completely arrested by the use of either subdural treatment or malaria, more often by the latter.

THE PREVENTION OF OPTIC ATROPHY IN THE UNINVOLVED EYE

In ten cases in our series, one or another form of treatment was begun while the atrophic process was, so far as could be determined, wholly unilateral. In seven of these ten the uninvolved eye remained perfectly normal for periods ranging from two and one-half to ten years. All seven patients were treated with subdural therapy, malaria or both. Two of the three in whom visual failure occurred in the previously uninvolved eye received routine treatment only.

CONCLUSIONS

1. Untreated primary optic atrophy always becomes bilateral and leads to permanent and complete blindness in practically every instance within seven years after the onset of symptoms.

2. Inadequate routine antisyphilitic therapy apparently neither hastens, delays nor prevents the development of blindness.

3. Adequate routine antisyphilitic therapy seems to delay the development of blindness to some extent and permanently to arrest the atrophic process in an occasional case.

4. Subdural treatment by the Swift-Ellis technic brings about permanent arrest of optic atrophy in about half the patients adequately treated, though it carries a risk of sudden extinguishment of vision in about 10 per cent of those treated. The observation periods in arrested cases range from two to twenty years.

5. Malaria therapy brings about permanent arrest of optic atrophy even more frequently (in our small material, apparently in about 85 per cent) and for observation periods ranging from one to nine years.

6. If treatment is begun while optic atrophy is unilateral, involvement of the normal eye may be prevented in a high proportion (in our material 70 per cent) of cases.

7. The initial form of treatment for syphilitic primary optic atrophy should be induced malaria, because its observed results are superior to and it is less dangerous to vision than subdural treatment. If visual failure progresses in spite of malaria, subdural treatment should always be tried. Either of these special forms of treatment should be followed by intensive and prolonged routine antisyphilitic treatment with trivalent arsenical drugs, bismuth compounds and mercury.

THE PICROTOXIN-BARBITURATE ANTAGONISM

CLINICAL OBSERVATIONS

RICHARD KOHN, M.D.
NORTH CHICAGO, ILL.

WITH THE COLLABORATION OF
S. S. PLATT, M.D.
AND
S. Y. SALTMAN, M.D.
CHICAGO

Picrotoxin, until recently a drug having experimental interest only, gained the attention of clinicians as a result of the studies of Tatum,¹ Maloney,² Koppanyi³ and others. After these investigators proved experimentally the remarkable antidotal properties against barbiturate poisoning, others were encouraged to use it in human beings. A number of cases have been reported which seemed to substantiate the animal evidence. Kline and Whitney⁴ gave a survey of the pertinent literature and described another case in which 69 mg. of picrotoxin was successfully employed in combating amytal poisoning. One of us⁵ has published the report of a very severe case of phenobarbital poisoning in which recovery occurred after administration of 169 mg. of picrotoxin. Four additional cases are here reported:

REPORT OF CASES

CASE 1.—History.—A white woman aged 36 had recently been overworked and nervous. Her physician had prescribed phenobarbital for occasional epileptic fits. On the evening of Jan. 1, 1938, she told her husband that she had taken "sleeping powders" with suicidal intent. A physician was called several hours later, who gave her an injection of apomorphine, which caused vomiting. She became worse, however, and was admitted to the Michael Reese Hospital at 3 p. m. January 2.

Examination.—On admission the patient was comatose, cyanotic and breathing stertorously; the temperature was 98.6 F., the pulse rate 132, the respiratory rate 26, and the blood pressure 120 systolic, 75 diastolic. The pupils were of normal size and reacted to light. Physical examination was essentially negative except for the absence of all deep tendon reflexes. The tentative diagnosis was barbiturate poisoning.

Course.—Within the next nine hours 2,500 cc. of 10 per cent dextrose in saline solution was given intravenously. During the night a total of 19 grains (1.2 Gm.) of caffeine with sodium benzoate, 13.5 cc. of coramine (25 per cent solution of pyridine betacarboxylic acid diethylamide) subcutaneously, one-tenth grain (0.006 Gm.) of strychnine and $\frac{1}{50}$ grain (0.0004 Gm.) of atropine were given. In spite of this the coma deepened and the blood pressure sank to 70 systolic, 45 diastolic; the pulse became very fast and thready. The temperature rose to 102.4 F.

January 3, the general condition became rapidly worse; coarse rales and signs of pulmonary edema developed and cyanosis increased. The blood pressure at noon was 90/60. The gag and corneal reflexes disappeared. A marked hippus and

From the Department of Pharmacological Research, Abbott Laboratories, North Chicago, Ill., and Michael Reese Hospital.

The Mount Sinai Hospital gave the authors permission to publish the report of case 3 and the service of Dr. Taub of Cook County Hospital to publish the report of case 4.

1. Maloney, A. H.; Fitch, R. H., and Tatum, A. L.: Picrotoxin as an Antidote in Acute Poisoning by the Shorter Acting Barbiturates. *J. Pharmacol. & Exper. Therap.* 41: 465-482 (April) 1931. Maloney, A. H., and Tatum, A. L.: Picrotoxin as an Antidote in Acute Poisoning by the Longer Acting Barbiturates, *ibid.* 44: 337-352 (March) 1932.

2. Maloney, A. H.: A Comparative Study of the Antidotal Action of Picrotoxin, Strychnine and Cocaine in Acute Intoxication by the Barbiturates. *J. Pharmacol. & Exper. Therap.* 19: 133-140 (Oct.) 1933.

3. Linegar, C. R.; Dille, J. M., and Koppanyi, Theodore: Antidotal Action of Picrotoxin in Extreme Cases of Experimental Barbiturate Poisoning. *Proc. Soc. Exper. Biol. & Med.* 23: 396-399 (Dec.) 1935.

4. Kline, E. M.; Biggs, Edward, and Whitney, H. A. K.: Picrotoxin in the Treatment of Barbiturate Poisoning. *J. A. M. A.* 104: 328-330 (July 31) 1937.

5. Cohen, S. J., and Kohn, Richard: The Use of Picrotoxin as an Antidote for Lethal Poisoning. *J. Pharmacol. & Exper. Therap.* 60: 102 (June) 1937.

nystagmus developed; there was no response to painful stimuli and a catheterized specimen of urine was analyzed for barbiturates. Spinal puncture revealed a clear fluid under normal pressure. Administration of picrotoxin was started. The course and treatment for this day are summarized in the accompanying table.

January 4, picrotoxin treatment was continued during the night, 72 mg. more being given until 8 a. m., 30 mg. intramuscularly. The general condition was markedly improved. The blood pressure was 118 systolic, 70 diastolic, temperature 102.2 F., pulse rate 132. Only slight cyanosis was present. The pulmonary edema had disappeared but subcrepitant rales were heard in the lower lobe of the right lung. The patient moved and moaned continually. A pulmonary edema which recurred in the late afternoon was successfully combated with two injections of 0.45 mg. of strophanthin and 1 cc. of surgical solution of posterior pituitary.

January 5, picrotoxin was continued during the night by intramuscular injection, the total being brought up to 280 mg.

Summary of Course and Treatment January 3 in Case 1

Time P. M.	Medication	Route	Indication	Response of Patient
1:00	0.5 mg. k-strophanthin in 50% dextrose	Intravenous	Falling circulation	Decrease of pulse rate; blood pressure up
1:00 to 1:30	45 mg. picrotoxin in divided doses of 9-15 mg. at 10 minute intervals	Intravenous	Coma	At 1:30 moaning and light twitching of eyelids; corneal and gag reflex returned; blood pressure 110/70.
1:30	Oxygen-carbon dioxide, 6 inhalations every 30 minutes; suction to pharynx	Nasal catheter mask	Cyanosis, depressed respiration; accumulation of mucus	Color improved; deeper breathing; airway free
1:30 and 2:00	1 cc. of solution of posterior pituitary	Subcutaneous	Pulmonary edema	Fewer rales
2:00	So far 75 mg. of picrotoxin			
2:05	.....	.....	.....	Rigor and spastic movement of head and arms developed; respiration stopped for short time; complete relaxation within 40-50 seconds; gag and corneal reflex negative; condition poorer
2:50	Picrotoxin resumed	Intravenous	.....	Gag and corneal reflexes returned; coma lighter; patient moaned and moved
6:00	0.35 mg. of strophanthin	Intravenous	.....	Pulmonary edema subsided
12:00	264 mg. of picrotoxin given altogether			

The circulation was more satisfactory than at any time since admission. The temperature was 102.5 F.; blood pressure 118 systolic, 70 diastolic. Signs of bronchopneumonia were developing in the right lower lobe. The patient was incontinent of urine, very restless and active. At noon 0.4 mg. of strophanthin and 100 mg. of ascorbic acid were given intravenously. Picrotoxin was injected intravenously and intramuscularly in doses of from 6 to 12 mg., depending on the state of the patient, with the aim of keeping her moving and slowly decreasing the degree of depression. A Levine tube was passed through the nose and feeding was begun.

January 6 the patient responded definitely to pain stimuli, and the patella reflexes returned. The blood pressure was 125 systolic, 65 diastolic, the temperature 102.0 F., and the condition of the lungs unchanged. Parenteral administration of fluid was discontinued and food and ascorbic acid were administered by the Levine tube. In the forenoon 0.25 mg. of strophanthin was given. Picrotoxin therapy was continued, which brought the total up to 653 mg. at 6 p. m.

January 7, picrotoxin treatment was restricted to intramuscular injections of 6 mg. at approximately two hour intervals during the night. At 9 a. m. 6 mg. was injected intravenously, after which the patient responded for the first time with slurring speech to a question by her husband. At 12 o'clock noon the last injection of picrotoxin was given, making

a total of 671 mg. within the period of four days. The mental condition of the patient improved rapidly and she was fairly normal in the late afternoon after seven days of coma. The condition of the lungs remained unchanged. The temperature at 6 p. m. was 104 F. and the blood pressure 140 systolic, 81 diastolic.

January 8, the patient was rational. The white count was 10,000, hemoglobin content 50 per cent, urinalysis negative, blood sugar 103 mg. per hundred cubic centimeters, nonprotein nitrogen 38 mg., blood chlorides 556 mg., cholesterol 188 mg., icteric index 5. The patient received 230 cc. of citrated blood intravenously.

January 9 the general condition was good. There were still rales in the right lung, especially in the anterior part. The Levine tube was removed.

From January 10 to 15 the condition of the lung showed signs of improvement. The temperature dropped gradually to 99 F. Coughing persisted. The patient would not talk voluntarily about the real reason for her hospitalization but had a fairly accurate conception of the duration of her unconsciousness.

Further Course.—The temperature rose slowly again the next few days. Physical examination revealed only a slight dulness over the right lung, but normal breathing and no rales. X-ray examination showed the presence of a lung abscess the size of a small orange in the right upper lobe. The temperature remained around 100 F. At the same time the patient suffered much from pain, paresthesia and paresis beginning in the right shoulder and involving the whole arm. January 25 the patient was discharged at her own request with a temperature of 100.6 F., moderate coughing and neuritis of the right arm, which, however, was already subsiding. Her mental condition was excellent. She was treated at home with a preparation of guaiacol. The temperature fell rapidly and a later roentgenogram showed the lung abscess to be in a state of resorption.

The patient refused obstinately to talk about the whole incident. While Ekkes' test for barbiturates was positive in the second specimen of urine, it was not possible to perform the isolation of the barbiturate. Her husband was unable to give helpful information concerning the dose, and other investigations in this line were unsuccessful. However, it appears certain that the patient had a large supply of phenobarbital at her disposal.

CASE 2.—A white woman aged 63 had taken an unknown amount of barbital on July 6, 1937. She was found in deep coma the next morning and was treated in her home unsuccessfully with various stimulants, intravenous dextrose and digitalis. The coma deepened; the blood pressure fell to 100 systolic and 60 diastolic in the afternoon. The respiration became stertorous, and cyanosis of the face and hands developed. When first seen at 11 p. m. there was a marked and progressive pulmonary edema present. All other reflexes were abolished. Picrotoxin treatment was started in fractional doses of from 6 to 12 mg. intravenously until 1 a. m., up to which time 60 mg. was given without lightening the depression or producing symptoms of spinal excitation. The patient died from circulatory failure at 3 a. m. Barbiturate was present in the urine.

CASE 3.—A white woman aged 23 was in deep coma on admission to the Mount Sinai Hospital at 5 p. m., February 14, 1938. According to information given by friends, she had taken 20 grains (1.3 Gm.) of acetylsalicylic acid, one-fourth grain (0.015 Gm.) of codeine and 5 grains of antipyrine for the relief of severe headache several hours before admission; several capsules of pentobarbital sodium (nembutal) were found in her purse.

The pupils were equal, small and reacted to light; the pharyngeal reflex was weak and there was no reaction to painful stimuli. The heart and lungs were normal. Blood pressure was 130 systolic, 90 diastolic, pulse rate 80, respiratory rate 12, temperature 102.8 F.

The patient's stomach was washed. She received 50 cc. of 50 per cent dextrose solution intravenously and several injections of stimulants such as ephedrine, strychnine and camphor. There was a rapid but only transient response following this medication. Soon the respiratory rate fell from 8 to 4 per minute and the patient was put in a Drinker respirator. At

10:15 in the evening she was given 6 mg. of picrotoxin intravenously, following which the respiration rate went up to 12 per minute. Ten minutes later 12 mg. of picrotoxin was given intravenously and the patient responded slightly to painful stimuli. The respiratory rate increased to 16. She was then removed from the respirator. At 10:05 another dose of 3 mg. intravenously was given, after which jerky movements of the head and shoulders appeared, but no convulsions. At 1 a. m. she responded verbally and the temperature went down to 99.6 F.; the respiratory rate was 16. The jerky movements subsided about 1:30 and the patient was completely rational in the morning. She admitted taking pentobarbital sodium but refused to give the amount.

CASE 4.—History.—A white man aged 30 was brought to the Cook County Hospital March 3, 1938, at 6:30 a. m. in deep coma, in which state he was found in a hotel room. The temperature on admission was 98 F., pulse rate 78, blood pressure 130 systolic, 90 diastolic, respiration 20 and stertorous. The pupils reacted only sluggishly to light. The heart, lungs and the abdomen were essentially normal. All deep reflexes were diminished. A gastric lavage was performed and 1,000 cc. of saline solution was given by rectal drip. Caffeine with sodium benzoate 10 grains (0.6 Gm.) was given every four hours. Strychnine $\frac{1}{30}$ grain (0.002 Gm.) was given once. No improvement was noted. At 12:30 p. m. picrotoxin treatment was started. Five intravenous injections of from 3 to 9 mg. were given at intervals of from ten to twenty minutes until 1:47. The patient responded with increasing reaction to painful stimuli and finally showed aimless movements, especially of the arms. The treatment was continued, chiefly by intramuscular injection. The intervals between injections were increased up to two hours during the night. The single dose was from 6 to 9 mg. In addition the patient received twice $\frac{1}{400}$ grain (0.0006 Gm.) of atropine, 60 cc. of 25 per cent dextrose intravenously and 1,000 cc. of dextrose-saline solution subcutaneously. Following the intravenous injection of 6 mg. of picrotoxin at 6:30 the patient opened his eyes and coughed; the whole condition was improved.

March 4, 6 mg. of picrotoxin every second hour was given intramuscularly during the night, making a total of 156 mg., 54 mg. of which was injected intravenously. Since the patient was still very drowsy, intravenous injection was resorted to in doses of 3 mg. every ten minutes. This caused a progressive decrease of the depression. The patient performed more voluntary movements and began to respond to questions. A nasal tube was introduced and feeding begun. The temperature was 102.5 F.; the lungs were clear. Since twitching movements of the head and arms occurred occasionally, picrotoxin was given only at thirty minute intervals in doses of 6 mg. In the afternoon the patient showed purposeful movements and asked for cigarettes. Picrotoxin was discontinued at 3:40 p. m. Since 8 a. m. 75 mg. had been given, bringing the total dose to 228 mg. within twenty-seven hours.

Further Course.—The temperature dropped to normal the next day. The patient was completely rational and appeared well. He admitted attempting suicide by taking 100 grains (6.5 Gm.) of barbital and 10 grains (0.6 Gm.) of pentobarbital sodium the night before he was brought to the hospital.

COMMENT

It is well known that the prognosis of barbiturate poisoning is uncertain; none of the various symptoms give a definite clue. However, the clinical picture as a whole, the condition of the circulation and especially of the lungs, allows cases to be classified according to their seriousness. All our patients had a high temperature even when no impairment of the lung could be found. The fever subsided promptly with recovery from the depression. The exact amount of the barbiturate taken can be determined only in the minority of cases, and while it is statistically important it has only a limited value for the prognosis in the specific case. Gillespie⁶ showed that deaths may rarely follow

doses of from 5 to 20 grains (0.3 to 1.3 Gm.) of barbital or 15 grains (1 Gm.) of phenobarbital. With these doses death must be attributed to idiosyncrasies, but he also collected reports of a number of cases in which from 40 to 70 grains (2.6 to 4.5 Gm.) of these two drugs (a dose which is not generally fatal) produced death. On the other hand Tainter⁷ reported recovery after 18 Gm. of barbital had been taken without the use of very strong antidotes. Gastric lavage, which is generally performed, makes it even more difficult to judge the dose that became effective in the patient.

Bronchopneumonia, atelectasis, stasis, pulmonary edema and abscess of the lung are the most serious complications of the respiratory tract following barbiturate poisoning. Jacobi⁸ has shown that toxic doses of barbital directly damage the capillaries, and there is good evidence that the bronchopneumonia is due partly to this action. This might hold partly also for the early occurrence of pulmonary edema, as we observed it in case 1. Unlike barbital and phenobarbital, the pentobarbital sodium in case 3 produced a dangerous respiratory depression which necessitated artificial respiration.

We believe that our cases give evidence for the effectiveness of picrotoxin in combating the cerebral and medullary depression. Though a variety of other stimulants were given earlier in the treatment of these cases, the effect was absent or transient. The action of such stimulants in every case had subsided by the time picrotoxin was well under way. Thus it was possible to observe clearly the effect of picrotoxin. We found it most satisfactory to inject picrotoxin intravenously in fractional doses, the size and interval depending on the degree of depression and the response of the patient. In serious cases due to long acting barbiturates it would hardly be possible to produce prompt and permanent awakening by a single dose or even by several closely grouped large doses. Overdosage leads only to overstimulation of the spinal cord without restoring the control of the brain. An attack of convulsions is followed by an increased depression, as shown by case 1. We are therefore satisfied to produce as rapidly as is safe a decrease of the coma and to push stimulation to the point of spontaneous movements. This combats circulatory stasis, prevents aspiration and decreases the danger of complications in the lung. Until this stage is reached, intravenous administration is indicated; intramuscular injection can then be used to sustain the effect. Even when injected intravenously, picrotoxin has a latent period of several minutes. By rendering the full effect of a single dose promptly visible, intravenous fractional injections allow the best control of doses. We believe that our cases not only contribute to the proof of the efficiency of picrotoxin but also give evidence of its therapeutic range. To our knowledge, the amount used in case 1 is by far the greatest that has ever been successfully employed.

It has been proved⁹ in rabbits that even a hypnotic dose of pentobarbital sodium (35 mg. per kilogram) protects against about five times the lethal dose of picrotoxin. Higher amounts of barbiturate detoxify even larger doses of picrotoxin. Therefore, should an accidental overdose of picrotoxin result in convulsions which do not subside within one or two minutes, a

7. Chang, P. K., and Tainter, M. L.: An Unusual Case of Barbital Poisoning with Recovery, *J. A. M. A.* 106:1386 (April 18) 1936.

8. Jacobi, C., and Roemer, C., quoted in *Handbuch der experimentellen Pharmakologie* 1:442, 1923.

9. Kohn, Richard: A Quantitative Study of the Toxicity and Efficiency of Picrotoxin, *J. Am. Pharm. A.*, April 1938.

6. Gillespie, R. D.: On the Alleged Dangers of the Barbiturates, *Lancet* 1:337 (Feb. 17) 1934.

slow intravenous injection of a suitable barbiturate (for instance, pentobarbital sodium, amytal, evipal or pentothal [a thiobarbiturate preparation of Abbott Laboratories]) will control them immediately. Such a barbiturate should always be on hand when picrotoxin is administered. However, we have so far not been forced to resort to it.

Physical examination and blood chemistry, as performed in case 1 and also in the case previously reported,⁵ failed to reveal any pathologic changes, thus giving evidence for the fact that picrotoxin, even in very high doses, does not seem to produce deleterious effects on the metabolism.

While picrotoxin combats the drop of blood pressure caused by toxic doses of barbiturates, the condition of the circulation may require special treatment, as outlined in case 1. Other supportive measures, as administration of dextrose and fluid, are a valuable help in the treatment.

SUMMARY

Of four patients with barbituric poisoning treated with picrotoxin, one died and three recovered. One patient recovered after receiving 671 mg. of picrotoxin.

THE MENOPAUSAL SYNDROME

ONE THOUSAND CONSECUTIVE PATIENTS TREATED WITH ESTROGEN

L. F. HAWKINSON, M.D.

BRainerd, MINN.

Up to a few years ago the medical profession had little to offer the woman suffering from the menopausal syndrome. Treatment consisted chiefly of sedatives and psychotherapy. Discovery of the estrogenic hormone of the ovary and, more recently, the commercial production of more potent preparations of estrogen are radically changing the physician's point of view. Kaufmann¹ has recently stated that therapeutic resources

TABLE 1.—Miscellaneous Data in 1,000 Cases

	Number of Cases	
Natural menopause.....	841	
Menstruation.....	428	50.8 per cent
Amenorrhea.....	170	20.2 per cent
Irregular.....	201	23.9 per cent
Scanty.....	121	14.3 per cent
Menorrhagia.....	69	8.0 per cent
Metrorrhagia.....	45	5.3 per cent
Normal.....		40.8 years
Average age at onset of symptoms.....		44.4 years
Average age at onset of amenorrhea.....		37.2 months
Average duration of symptoms.....		
Artificial menopause.....	159	
Surgical castration.....	46	32.5 years
Average age at castration.....		7.2 months
Average time before onset of symptoms.....		
X-ray castration.....	37	34.6 years
Average age at irradiation.....		7.3 months
Average time before onset of symptoms.....		
Hysterectomy and intra-uterine radium.....	76	36.3 years
Average age at operation or irradiation.....		10.4 months
Average onset of symptoms.....		

in this field have been improved during the past few years to a degree which a short time ago would have been considered impossible.

In all, I have observed 1,000 patients in a period of six years. To insure uniformity of interpretation of results of treatment I compiled all the histories and myself observed all the patients. The series includes

841 cases of natural menopause and 159 cases of artificial menopause. The data on this series are given in table 1.

INCIDENCE

It is difficult to estimate the number of women who have distressing symptoms at the climacteric. Previous to the use of estrogenic preparations few women presented themselves for treatment, and in consequence few statistical studies were made. In a series² of 1,000 women in England who had passed through the menopause, only 15.8 per cent stated that they had passed through the climacteric without symptoms. Ten per cent of the same group stated that they were incapacitated by the symptoms. From personal observation it would seem that at least 75 per cent of women suffer from distressing symptoms at the climacteric.

ETIOLOGIC FACTORS

The precise mechanism by which symptoms are produced is not fully known. There is a natural decline in ovarian function at the menopausal age, and a decline in ovarian function is followed by a hyperfunction of certain factors of the anterior lobe of the pituitary. The adrenals are overstimulated by the adrenotropic factor and the thyroid by the thyrotropic factor, and the other glands in the chain are also affected. This disharmony causes a hormone imbalance with a resulting effect on the autonomic nervous system.³ Hannon⁴ was the first to demonstrate that patients at the menopause are very sensitive to epinephrine and that "flushes" can be provoked by the injection of small doses subcutaneously. In fact, periodic increased production of epinephrine seems to explain many of the neurocirculatory symptoms of the syndrome.

There seems to be little doubt that there is a reciprocal action between the ovaries and the anterior hypophysis. Estrogen, at certain levels of concentration, inhibits the function of the anterior lobe.⁵ The gonads, therefore, are a very important part of the chain, and when their influence is markedly diminished definite changes may be expected. The administration of estrogen aids in improving the hormone imbalance of the climacteric, probably by inhibiting certain factors of the anterior lobe of the pituitary.

SYMPTOMS

Cessation of menstruation is but one symptom of a large clinical syndrome. The subjective symptoms (table 2) may appear years before the amenorrhea and may persist into old age. In 74.3 per cent of the patients with natural menopause, the symptoms appeared in months previous to the amenorrhea. However, in a small group (5.2 per cent) the symptoms were delayed from five to twelve years after the cessation of menstruation.

Neurotic individuals usually have a more severe menopausal syndrome. There was a tendency for symptoms to be more severe in those women who had borne children, while miscarriages seem to have little influence. Patients with previous dysmenorrhea often had a more severe syndrome. Concomitant diseases may greatly influence the severity of the symptoms. This is especially true of hyperthyroidism and hypertension.

2. Council of the Medical Women's Federation: An Investigation of the Menopause in One Thousand Women, *Lancet* 1: 106 (Jan. 14) 1931.
3. Werner, A. A.: Symptoms Accompanying Ovarian Hypofunction: Study of 136 Cases, *J. Missouri M. A.* 28: 363 (Aug.) 1931.
4. Hannon, J. H.: The Flushings of the Menopause, London, Baillière, Tindall & Co., 1927.
5. Meyer, R. K.; Leonard, S. L.; Hisaw, F. L., and Martin, S. J.: Effect of Estrin on Gonad Stimulating Power of the Hypophysis, *Proc. Soc. Exper. Biol. & Med.* 27: 702 (April) 1930.

From the Brainerd Clinic.

1. Kaufmann, C.: Clinical Uses of the Female Sex Hormone, *J. Obst. & Gynaec., Brit. Emp.* 44: 310 (April) 1937.

The nervous, vascular, glandular, digestive and reproductive systems of the body are frequently disturbed. Though it is possible that too many symptoms are wrongly attributed to the menopausal syndrome, the consistent appearance of certain symptoms in a large percentage of patients and their disappearance after the administration of estrogen would seem to link them directly or indirectly with the climacteric. As Sevringhaus⁶ has stated, "the manifestations of the menopause are so varied in type that one is tempted to attribute to the climacteric any complaint, without obvious cause, which is made by a woman in the fifth or sixth decades."

TABLE 2.—*Syndrome Accompanying 1,000 Cases*

Order of Frequency of Symptoms	Per Cent
1. Nervousness, subjective.....	98.0
2. Menstrual disturbances.....	95.5
3. Flushes and chills.....	95.2
4. Excitability.....	88.4
5. Fatigability and lassitude.....	88.0
6. Depression and crying.....	81.6
7. Irritability.....	79.2
8. Sleep disturbed.....	72.3
9. Tachycardia, palpitation and dyspnea.....	71.3
10. Vertigo, scotomas.....	68.3
11. Decreased memory and concentration.....	63.0
12. Headaches.....	62.2
13. Frigidity.....	47.8
14. Numbness and tingling.....	44.7
15. Oculitoocervical aching.....	40.3
16. Vague and indefinite pains.....	38.5
17. Excessive sweating.....	32.0
18. Formication.....	30.7

DIAGNOSIS

Diagnosis is made by the subjective symptoms and the objective signs. Hormone studies of the blood and urine are, as yet, impracticable for general use.

The vaginal smear method as described by Papanicolaou and Shorr⁷ is valuable in differentiating the menopausal syndrome from other conditions and as an objective guide for therapy.

THERAPY

Few will deny that estrogen is almost specific for the majority of the symptoms of the menopausal syndrome. The method of administration and the dosage are the points on which investigators may not agree.

Five hundred and ten patients were treated with estrogenic preparations by hypodermic injection. The majority received the higher concentrations in oil, from 10,000 to 50,000 international units per cubic centimeter. After considerable trial with various doses it was found that 10,000 international units every three or four days, for about twelve injections, is the average amount necessary to control symptoms. A number of patients responded to smaller amounts while others required 50,000 international units for from twelve to sixteen injections.

Two hundred and ten patients of the series were treated with oral preparations alone. The dosage ranged from 180 estrogenic day units (Collip), 100 active biologic units to 6,000 international units daily for a period of from fifteen to sixty days before the majority of subjective symptoms were relieved.

A third group, 280 patients, was given a combination of oral and hypodermic therapy, 10,000 international

units of estrogen in oil by hypodermic injection every third or fourth day, and estrogen orally two or three times a day until symptoms were relieved.

All methods of administration produced good results. Patients with the menopausal syndrome are usually relieved when adequate amounts of estrogen are given, no matter what the route.

The combined therapy of hypodermic injections of the larger doses in oil every third day and the oral administration two or three times a day would seem to be the method of choice at the present time. When oral preparations are cheaper, oral therapy will probably be the method of choice in the majority of cases.

Vaginal smears at intervals of from ten days to two weeks furnish a simple objective guide for therapy and regulation of dosage. It is not always necessary to administer sufficient amounts of estrogen to restore the vaginal smear to the full follicular phase (leukopenia and flat enlarged cells, largely cornified, with pyknotic nuclei) to obtain relief from symptoms. Many patients obtain relief from the neurocirculatory symptoms when the smear shows the "grouped stage." The smaller doses will seldom cause a marked change in the vaginal smears and, though the symptoms are more or less relieved, patients usually obtain more complete relief when sufficient amounts of estrogen are given to change the smears to the follicular phase.

As soon as symptoms have been controlled the dose is gradually reduced and the patient is placed on maintenance doses of estrogen by mouth. Hypodermic injection has no place in maintaining the patient's well being in the majority of instances. The maintenance dose, which is usually about one-fourth the amount required to produce the initial effect, must be continued as long as is necessary, which may mean, in point of time, somewhere from six months to as many years.

Patients with artificial menopause usually have a more violent syndrome and require larger doses, frequently double the amount for control and maintenance.

Prophylactic administration of estrogen following castration (surgical or x-ray), hysterectomy or intrauterine radium is advisable. The consequence of sudden glandular imbalance that so frequently follows these procedures is mitigated.⁸

If the patient is subjected to emotional shocks or undertakes increased activities, larger doses may be necessary for a time. The reappearance of symptoms after a patient has remained symptom free for some time indicates the necessity for resumption of medication.

The 25 gage, three-fourths inch needle has been adopted for the injection of estrogenic preparations in oil. Slightly longer needles may be necessary for obese patients. The buttocks or deltoid muscles are suitable sites for injection, the latter being most desirable. Care must be taken to inject the solution intramuscularly. Though the use of the smaller needle makes it slightly more inconvenient to withdraw the oil solution into the syringe, the tendency to leakage is avoided and the injection is less painful.

The use of standardized preparations cannot be too strongly emphasized. It has been shown⁹ that desiccated ovarian products, so-called ovarian extracts, contain too small quantities of estrogenic substances to be of value clinically. Forty-one patients were given oral

6. Sevringhaus, E. L.: Medical Aspects of the Diagnosis and Treatment of the Menopause, *Journal-Lancet* 52: 495 (July 1) 1932.

7. Papanicolaou, G. N.: The Sexual Cycle in the Human Female as Revealed by Vaginal Smears, *Am. J. Anat. (supp.)* 52: 519 (May) 1933.

8. Papanicolaou, G. N., and Shorr, Ephraim: Action of Ovarian Follicular Hormone in the Menopause, as Indicated by Vaginal Smears, *Am. J. Obst. & Gynec.* 31: 806 (May) 1936.

9. Mazer, Charles, and Israel, S. L.: The Symptoms and Treatment of the Menopause, *M. Clin. North America* 19: 205 (July) 1935.

9. Hawkinson, L. F., to be published.

"ovarian extracts," as many as twelve tablets a day, for sixty days. Only two of these patients noted any benefit. The entire group was then given standardized estrogenic preparations orally and all but one responded with alleviation of the majority of symptoms. Thirteen of these patients were then given "ovarian extracts" again, and a return of symptoms followed in all cases within a period of six weeks. The patients were not aware of the type of preparations they were taking.

The value of desiccated thyroid in the menopausal syndrome has been greatly overestimated. Desiccated thyroid seems to be of value only when the basal metabolic rate is below normal.

There is no question that psychotherapy and sedatives are of some value in the treatment of the menopausal syndrome. However, their value has been too highly regarded. Few patients in the series were given psychotherapy and less than 10 per cent of the women were given sedatives. The limited value of psychotherapy and sedatives is demonstrated when the estrogen is discontinued.

Insufficient therapy is often worse than no therapy at all.¹⁰ These patients are emotionally unstable, become easily discouraged and, if they do not receive benefit from the initial therapy, are most difficult to convince subsequently.

PREPARATIONS USED

The oral preparations used in the series were estradiol (progynon DH), estriol (theclol), estrone (amniotin) and emmenin. The hypodermic preparations were estradiol benzoate (progynon B), and estrone (amniotin, estrolin and theelin).

RESULTS

The results in 1,000 consecutive cases show that 691 patients, or 69.1 per cent, were relieved of the majority of all symptoms; 149, or 14.9 per cent, were improved; 109, or 10.9 per cent, were doubtful, and fifty-one, or 5.1 per cent, obtained no relief. Results were evaluated by the disappearance of symptoms and by change in the vaginal smears.

Patients were not included in the "improved group" unless the majority of nervous and circulatory symptoms had been relieved. The doubtful group includes patients who were given oral therapy and did not return, patients who were not followed for a sufficient length of time and those with questionable improvement.

The relief of symptoms is usually gradual. Flushes and chills, excitability, irritability, depression and crying, palpitation and insomnia usually disappeared after the seventh or eighth injection of 10,000 international units of estrogen in oil or after from two to three weeks of adequate oral treatment. Sweating, fatigue, lassitude and headaches responded after further administration of estrogenic preparations. Occipitocervical aching, a symptom complained of by 403 patients, proved very amenable to therapy. Migraine is often completely relieved by adequate estrogenic therapy.

The return of uterine bleeding after treatment, following a period of amenorrhea, was noted in 22.2 per cent of patients. As a rule this was not a disturbing feature.

Libido was improved in a large number of patients. Werner and Collier,¹¹ Hall¹² and others have noted a similar effect.

The effects of estrogenic therapy on the breasts and genitalia are at times striking. The breasts enlarge and the nipples assume their former color and become erectile. The vulva enlarges and becomes moist. The vagina becomes pinker and the mucus is thicker and in greater abundance; the cervix and the body of the uterus are softer and enlarged.

The administration of estrogen had little effect on the obesity that was present in some patients. So-called menopausal arthritis seldom responds to estrogenic preparations. It is doubtful whether it should be included as a menopausal condition.

One should not be misled by initial relief of symptoms, for, as has been stated, permanent relief is not usually obtained unless treatment is continued for varying periods. If treatment is withdrawn after initial relief, symptoms are almost certain to recur within two to six weeks. This stresses the importance of continuous oral therapy with a gradual reduction of dosage until the patient is able to discontinue therapy and remain symptom free. Menopausal symptoms are often persistently troublesome and the average patient must remain on maintenance doses of estrogen for from two to three years.

Women with artificial menopause following hysterectomy and intra-uterine radium are often most difficult to control. These women, even with intact ovaries, usually show menopausal symptoms within eighteen months after operation or application of radium. The disturbance of the endometrial-ovarian relationship, though not fully understood at the present time, may account for the persistence of symptoms in these patients. Patients who have had a partial hysterectomy do not show this resistance to therapy.

Kurzrok¹⁰ believes that the duration of the menopausal syndrome is unaffected by treatment, which belief is found difficult to sustain in the present study.

Patients at the menopause who are still menstruating may be more difficult to control, owing to the fact that symptoms are frequently intensified about a week prior to the menstrual period. Also, excessive bleeding may become a problem in these women, and large doses of estrogen may increase the already profuse flow. Oral therapy in the form of emmenin is best suited to these cases.

No ill effects were seen in any patient even when doses up to 100,000 international units per week were given over a period of many weeks.

ASSOCIATED CONDITIONS

Involutional Melancholia.—Fourteen patients in the series were diagnosed as having involutional melancholia, of eight months' duration or less. In four of the cases the symptoms were so severe that the patients had to be kept under restraint. In three of the most severe cases daily injections of 10,000 international units of estrogen in oil were given, while in eleven the same dose was given every second to third day. Twelve patients made a complete recovery within a period of ten weeks. One patient who did not respond was later considered to have schizophrenia. More prompt response was obtained when the injections were given daily, and this suggests more frequent dosage.

Werner and his co-workers,¹³ after considerable experience with this type of treatment, conclude that estrogen is curative in uncomplicated cases of involu-

10. Kurzrok, Raphael: *The Endocrines in Obstetrics and Gynecology*, Baltimore, Williams & Wilkins Company, 1937.

11. Werner, A. A., and Collier, W. D.: *The Effect of Theelin Injections on the Castrated Woman*, J. A. M. A. 100: 633 (March 4) 1933.

12. Hall, G. J.: *Ovulation, Menstruation and the Hormones*, Am. J. Surg. 21: 272 (Aug.) 1933.

13. Werner, A. A.; Kohler, L. H.; Ault, C. C., and Hocter, E. F.: *Involutional Melancholia, Probable Etiology and Treatment*, Arch. & Psychiat. 35: 1076 (May) 1936.

tional melancholia. Though Shube and his associates¹⁴ noted no beneficial effects in ten cases, Sevringhaus,¹⁵ Mazer and Israel,⁸ Jones,¹⁶ Suckle,¹⁷ Tarumianz¹⁸ and others have reported favorable results.

Pruritus Vulvae and Senile Vaginitis.—Twenty of the twenty-three patients in the series suffering from pruritus vulvae obtained complete and lasting relief after the injection of estrogen in oil. Numerous writers have noted similar results.

Davis,¹⁹ Jacoby and Rabbiner²⁰ and more recently Lewis and Adler²¹ have reported excellent results in treating senile vaginitis with estrogen intramuscularly. Six patients in the series were relieved with vaginal suppositories containing 2,500 rat units of estradiol (progynon suppositories). This method offers the advantage of simpler administration.

Menopausal Hypertension.—Schaefer²² reported relief in twenty-six cases of menopausal hypertension with estrogenic preparations.

Ninety-six patients in this series had blood pressures high enough to be classified as hypertension. In eighteen cases the blood pressure returned to normal or near normal after the administration of estrogen. Only menopausal hypertension responds to estrogenic therapy; hypertension due to other causes does not.

COMMENT

For years physicians have attempted to relieve the symptoms of the climacteric with preparations of the ovary. Previous to the appearance of estrogenic preparations whole ovarian extracts, ovarian concentrates and corpus luteum extracts were used with indifferent success.

In the past few years several reliable reports on the use of estrogen in the menopausal syndrome have appeared. Sevringhaus,²³ Werner,²⁴ Mazer and Israel,⁸ Frank, Goldberger and Salmon,²⁵ Houghton and Neville²⁶ and others have presented sizable series of cases in which treatment was successful. There are few investigators who do not agree that the treatment of the menopausal syndrome with estrogen is established beyond doubt. Early workers were handicapped by the low potency of estrogenic preparations; more recently adverse reports have appeared in which it would seem that the investigators failed to obtain good results because of inadequate dosage.

Various other methods of controlling menopausal symptoms have been attempted. Geist and Mintz,²⁷ after treating seventy-five patients with pituitary radiation, concluded that this type of treatment is limited because only a restricted number of exposures can be given. The severe symptoms that frequently follow x-ray castration weigh strongly against this procedure.

The question of the possibility of estrogenic preparations producing carcinoma has been a source of anxiety to a number of physicians. It has been shown that carcinogenic substances and estrogen have similar structural formulas. Also it is true that carcinoma can be produced experimentally in certain animals with estrogen. This would seem significant were it not for the fact that the work has been done chiefly in the rodent, with relatively huge doses, and with animals having a high hereditary tendency to the development of carcinoma. Frank and his associates²⁵ point out that the danger of estrogen producing carcinoma is probably only theoretic, for during pregnancy large quantities of estrogenic substances are constantly circulating in the blood and excreted in the urine. Though the possibility must of course be kept in mind, most workers believe that in the human being, with the doses used at the present time, the likelihood of carcinoma is very remote.

SUMMARY AND CONCLUSIONS

Owing to the advances made in endocrine therapy, the physician's point of view regarding the treatment of the menopausal syndrome is changing. The percentage of women having distressing symptoms during the climacteric has been greatly underestimated. The tradition that they must be borne is unsound, for the administration of estrogenic preparations is rational and relieves the symptoms in a great majority of cases.

Involutional melancholia, pruritus vulvae, senile vaginitis and menopausal hypertension are also frequently relieved by estrogens.

The age limits for the syndrome are wide. The symptoms may begin months or years previous to the cessation of menstruation and often persist for years.

The symptoms are protean and, though the ovaries play the chief etiologic role, the other glands in the endocrine chain are definitely involved. Artificial menopause usually produces more violent symptoms.

Diagnosis is made by the objective signs and the subjective symptoms. Vaginal smears aid in differentiation and are most valuable in a study of the effects of therapy.

Treatment should be instituted as soon as symptoms appear. Dosage must be adequate and treatment should be continued until the patient remains free from symptoms without therapy. Higher doses are usually required in patients with artificial menopause.

Failure to obtain relief from the majority of the subjective symptoms in uncomplicated menopause is usually due to inadequate dosage.

27. Geist, S. H., and Mintz, Maurice: Pituitary Radiation for Relief of Menopausal Symptoms, *Am. J. Obst. & Gynec.* 33:643 (April) 1937.

Orderliness of Science.—The history of science is sharply contrasted with that of art by the fact that we can build in an orderly manner on the foundations of our predecessors while each new school of art appears to find it necessary to denigrate those who went before and to despise their work. But this very orderliness has a danger of its own; it makes it more difficult to expel error.—Langdon-Brown, Walter: *The Dead Hand in Medical Science*, *Lancet* 1:277 (Jan. 29) 1938.

14. Shube, P. G.; McManamy, M. C.; Trapp, C. E., and Houser, G. F.: Involutional Melancholia Treatment with Theelin, *Arch. Neurol. & Psychiat.* 38:505 (Sept.) 1937.

15. Sevringhaus, E. L.: The Use of Folliculin in Involutional States, *Am. J. Obst. & Gynec.* 25:361 (March) 1933.

16. Jones, M. S.; MacGregor, T. N., and Tod, H.: Estradiol Benzoate Therapy in the Depressions at Menopause, *Lancet* 1:320 (Feb. 6) 1937.

17. Suckle, J. E.: The Treatment of Involutional Melancholia by Estrogen, *J. A. M. A.* 109:203 (July 17) 1937.

18. Tarumianz, M. A.: Psychiatric Implications of Endocrine, *Delaware State M. J.* 8:93 (June) 1936.

19. Davis, M. E.: The Treatment of Senile Vaginitis with Ovarian Follicular Hormone, *Surg., Gynec. & Obst.* 61:680 (Nov.) 1935.

20. Jacoby, Adolph, and Rabbiner, Benjamin: Treatment of Senile Vaginitis with Estrogenic Hormones, *Am. J. Obst. & Gynec.* 31:654 (April) 1936.

21. Lewis, R. M., and Adler, E. L.: Endocrine Treatment of Vaginitis of Children and of Women After the Menopause, *J. A. M. A.* 109:1873 (Dec. 4) 1937.

22. Schaefer, R. I.: Menopausal Hypertension, *Endocrinology* 19:705 (Nov.-Dec.) 1936.

23. Sevringhaus, E. L.: The Relief of Menopausal Symptoms by Estrogenic Preparations, *J. A. M. A.* 101:624 (Feb. 23) 1935.

24. Werner, A. A.: *Endocrinology: Clinical Application and Treatment*, Philadelphia, Lea & Febiger, 1937. Werner and Collier.¹¹

25. Frank, R. T.; Goldberger, M. A., and Salmon, U. J.: The Menopause: Symptoms, Hormonal Status, and Treatment, *New York State J. Med.* 36:1363 (Oct. 1) 1936.

26. Houghton, William, and Neville, Mary: The Treatment of Menopause at Milwaukee County Dispensary, *Wisconsin M. J.* 35:879 (Nov.) 1936.

BRONCHIECTASIS

A NEW CONCEPTION OF ITS ETIOLOGY WHICH
MAKES PREVENTION AND RECOVERY
POSSIBLE

SAMUEL H. WATSON, M.D.

AND

CHARLES S. KIBLER, M.D.

TUCSON, ARIZ.

Bronchiectasis, the bugbear of every physician called on to treat it, may frequently be successfully combated in its earlier stages if considered a sequela of allergic bronchitis.

For many years patients with bronchial disturbances have been seeking relief in the warm, dry Southwest. Also in recent years otolaryngologists have been more conservative as regards operations for sinusitis and are advising their patients to try the climate of the Southwest before advising nasal surgery. Consequently, many patients with chronic sinusitis and bronchiectasis come to this area. Usually the patients have not had relief elsewhere, and present cases of long duration.

The fundamental basis for chronic or recurrent sinusitis is commonly an allergic rhinitis. Hansel¹ finds that almost half (44 per cent) of his patients seeking relief for nasal trouble are allergic and have abnormal amounts of eosinophils in their nasal secretions. Here in the Southwest we find the proportion even higher. We have observed that patients with bronchiectasis frequently have hay fever, eczema, moderate but definite asthma at times or other manifestations of clinical allergy. It occurred to us to investigate the bronchial secretions of all patients with bronchiectasis, because bronchiectasis and sinusitis commonly coexist. We were surprised to find in bronchiectasis that the bronchial secretions generally had an abnormally high percentage of eosinophils; that is, 10 per cent or more. We then searched for other evidence of allergy and performed cutaneous tests. So consistently did we find high percentages of eosinophils or clinical allergy in bronchiectatic patients that for over two years now we have studied all cases of sinusitis and bronchiectasis from an allergic point of view. In fully 90 per cent of cases of bronchiectasis, a definite diagnosis of allergy may be made on the evidence found.

The medical treatment of bronchiectasis has been unsatisfactory. Frequently some improvement may be obtained by a dry, warm climate, but even supplementing climatic aid with rest, postural drainage, roentgen therapy, vaccine therapy or instillations of iodized oil, only moderate temporary benefit results, with frequent recurrence. The only permanent relief for far advanced bronchiectasis is lobectomy or pneumonectomy.

We divide all bronchiectasis into three classes:

1. Congenital bronchiectasis.
2. Mechanical bronchiectasis, as accompanying tuberculosis, thoracoplasty, fibrous pleuritis, pulmonary fibrosis, and so on.
3. Allergic bronchiectasis.

In this article we refer only to allergic bronchiectasis, which in our experience is by far the commonest type, comprising as previously stated more than 90 per cent of the cases coming under our observation.

In studying bronchial disturbances in the Southwest by x-ray studies with iodized oil, cytologic examination of sputum and nasal secretion, and cutaneous testing we encounter four types of cases:

1. Cases diagnosed bronchiectasis elsewhere because of chronic cough, marked amount of purulent sputum and basal lung rales, which we find show no evidence of bronchial dilatation as revealed by x-ray examination with iodized oil but only basal allergic bronchitis. Often in these cases symptoms have existed for ten years or more.

2. Cases like the foregoing in which slight bronchiectasis exists, as evidenced by lack of tapering of the descending small bronchioles.

3. Cases in which there is moderate bronchiectasis.

4. Cases in which there is far advanced bronchiectasis, marked pocketing is shown and large amounts of purulent foul sputum are raised.

In each of these four states, strong evidence of allergy is found.

REPORT OF CASES

We have selected from our series one case to illustrate each type.

CASE 1 (type 1).—J. M., a youth aged 15, had had a cough and frequent colds since infancy. At 3½ years of age the tonsils and adenoids were removed. A few weeks later he began to have asthma and since then he had been subject to attacks of asthma at intervals of about three weeks lasting about three days. Usually he had nausea and vomiting with asthmatic attacks. He was referred in September 1932 with the diagnosis of advanced bronchiectasis and asthma. X-ray examination with iodized oil had not been performed at this time but we concurred in the diagnosis. Asthma was present after the patient came under our observation. There were marked basal bilateral bubbling and squeaking rales and a marked amount of purulent sputum. Nasal and sputum eosinophils were negative, blood eosinophils 12, 11 and 10 per cent on three occasions. The patient was tested and found markedly sensitive to timothy, ragweed, cottonseed, the cereal group and kapok. He improved in the Southwest but was worse each summer when he returned East. Desensitization therapy was started in September 1934 and he improved with reduction of sputum, cough and wheezing attacks until all signs and symptoms were gone by May 1936. Use of iodized oil was permitted April 16, 1938, revealing no bronchiectatic dilatation. The patient has remained without symptoms here for two years. Last summer he had a mild attack of hay fever during the pollen season in Ohio without any other symptoms.

CASE 2 (type 2).—C. D., a boy aged 11, had croup at 2½ years of age after which a cough started, which has continued to date. He had an uncle with asthma, and one cousin has eczema. We first saw him in March 1937. Slowly and gradually he became worse, with about 1 ounce (30 cc.) of mucopurulent sputum daily. He had no definite sinusitis, asthma or hay fever. There were many bubbling rales at the left base, a few at the right base. About everything but surgery had been tried with no improvement. The patient had no allergic manifestation. The sputum showed 10 per cent eosinophils, nasal secretions 30 per cent, blood 4 per cent. Cutaneous tests to cosmetics, pollens, foods and dust were positive. Desensitization treatment was started in March 1937. Within one month all rales, cough and expectoration disappeared and have remained away since, except on one occasion early in treatment on exposure to severe dust, when the cough returned for a few days. Now the patient is symptom free. X-ray examination in March 1937 confirmed the diagnosis of bronchiectasis showing slight cylindric bronchiectasis at the left base. A roentgenogram taken with iodized oil in April 1938 showed both sides free of any dilatation. Basal rales, cough and expectoration had all gone.

CASE 3 (type 3).—A. G., a boy aged 16, had coughed since he had whooping cough at 3 years of age. The condition

From the Tucson Clinic.
1. Hansel, F. K.: Allergy of the Nose and Paranasal Sinuses, St. Louis, C. V. Mosby Company.

gradually grew worse. The cough was periodic in type, occurring three or four times daily, with 2 ounces (60 cc.) of mucopus daily at the worst. Asthma developed later. The patient came to us with the diagnosis of bronchiectasis and asthma, in which we concurred. No roentgenograms with iodized oil were made because he was so sick his parents would not permit it. He had moist rales at the right base, a few at the left base. There were no eosinophils in the nasal or bronchial secretions; they numbered 12 per cent in the blood. His mother's father had asthma, a brother had chronic sinusitis, a sister had cyclic vomiting. Cutaneous testing showed sensitization to foods, dusts and pollens. Desensitization treatment was started in October 1936. By July 1937 all signs and symptoms were gone for the first time in thirteen years; the patient had no cough, expectoration, asthma or rales, although a roentgenogram made with iodized oil in April 1938 showed moderate dilatation of the bronchi at the right base.

CASE 4 (type 4).—R. F., a man aged 22, had had nasal and bronchial trouble as long as he could remember, with nasal obstruction and discharge, and expectoration of a marked amount of purulent sputum. There was no history of pneumonia. He recovered from measles but thought that cough had been present ever since he had whooping cough. A diagnosis of sinusitis and bronchiectasis was made in 1930. A radical antrum operation was performed. He came under our care in March 1937. Pansinusitis was found with a purulent discharge containing 50 per cent eosinophils in the nasal secretion and 25 per cent eosinophils in the sputum. The sputum amounted to about 8 ounces (240 cc.) in twenty-four hours before coming to Arizona, about 4 ounces (120 cc.) at the first examination three years later. X-ray examination with iodized oil revealed far advanced sacular bilateral bronchiectasis. There was no history of clinical allergy until he came to the Southwest, when he had hay fever during olive tree pollination. Cutaneous tests revealed marked reactions to pollens, foods and house dust. Since desensitization therapy the sputum, which had been remaining constant for three years in the Southwest, has diminished 50 per cent more with marked relief from cough. There is moderate improvement of the nasal discharge.

COMMENT

Seeing all stages of this condition from basal allergic bronchitis without bronchial dilatation to far advanced bronchiectasis and noting that the great majority have accompanying manifestations of allergy makes us feel that most bronchiectasis is caused primarily by basal allergic bronchitis. It is preventable therefore if the basal allergic bronchitis is recognized as such and given intensive treatment before bronchiectasis results. However, even after bronchiectasis has developed, the disease may be successfully combated if treated early.

After allergic study all patients are given treatment by means of desensitization, elimination diets, and avoidance of allergens in the environment. We find that the commonest sensitizations are to feathers, pollens, orris root, house dust and wool, although we have had a few cases in which foods were the most important factor.

Improvement is in proportion to the advancement of the disease. The more advanced the disease, naturally the poorer the results. Even, however, in the advanced cases definite benefit is usually obtained in reducing the amount of cough and purulent sputum and also in the reduction of nasal obstruction and discharge, when the latter is present. We have encountered cases of bronchiectasis which were accompanied by pulmonary fibrosis and fibrous pleuritis, but even in some of these cases high percentages of eosinophils were found in the sputum. Probably the pathologic condition found was not the cause of the bronchiectasis but was the result of allergy, atelectasis and marked pulmonary infection.

There is abundant evidence in the literature that bronchiectasis and atelectasis are commonly associated.

Basal allergic bronchitis with its allergic swelling of the mucosa and outpouring of tenacious secretion combined with bacterial infection and poor drainage seems adequate cause for producing atelectasis. We believe the chain of events is first the basal allergic bronchitis, second the atelectasis and third in a variable length of time the bronchiectatic dilatation. Andrus² presented an excellent article on the mechanism of the production of bronchiectasis, which he feels is secondary to atelectasis. He believes that localized atelectasis of any degree with its surrounding compensatory emphysema without loss of pulmonary elasticity causes an external pull on the bronchial branches, favoring pocketing. However, generalized primary pulmonary emphysema or the overdistention of lungs secondary to severe and continued bronchial asthma with its attendant increased intrapleural pressure and permanent loss of pulmonary elasticity has a tendency to prevent rather than cause bronchial dilatation. Likewise severe asthma with frequent cough and forcible expiration does not favor atelectasis. We believe that only a localized basal allergic bronchitis without any marked asthma provides the basis for atelectasis and its resulting bronchiectasis.

It is well known that an attack of an acute respiratory infection often initiates prolonged asthma. It seems reasonable to think that the association of bronchiectasis and respiratory infection can be explained on the hypothesis that the respiratory infection is the means of starting basal allergic bronchitis, which eventually results in bronchiectasis.

SUMMARY AND CONCLUSIONS

1. The great majority of patients with bronchiectasis have abnormal percentages of eosinophils in their sputum or clinical manifestations of allergy.

2. Basal allergic bronchitis can present all the clinical features of advanced bronchiectasis except bronchial dilatation, as shown by roentgenograms made with the use of iodized oil.

3. We believe that, if this basal allergic bronchitis is recognized and is treated by allergic management, bronchiectasis will not occur.

4. Bronchiectasis having occurred, it is still remediable if in the early stage, with the same kind of management.

110 South Scott Street.

2. Andrus, P. M.: Bronchiectasis: Analysis of Its Causes, *Am. Rev. Tuberc.* 36: 46 (July) 1937.

The Care of the Mentally Ill.—Time alters many things, including the meaning of terms. When, for example, young Horace Mann stood on the floor of the Massachusetts legislature and enunciated the principle that "the insane are the wards of the state," his thought was quite removed from the present-day conception of his words. In Mann's time "state care," as construed even by the progressive elements, implied no more than the duty of the state to see that all the insane requiring institutionalization received it in special asylums. The latter did not necessarily have to be built, maintained or supervised by the state itself. A later generation defined the principle as establishing the state's duty to supervise the care of all the insane within its borders, though contributing to the support of this class only to a limited degree. Today, in such states as New York and Massachusetts, state care includes provision in state-owned hospitals, administered and maintained by the state, for all mentally ill persons in need of public care and treatment. The evolution of state care followed a long and winding trail before reaching its most significant expression with the passage of the New York State Care Act of 1890.—Deutsch, Albert: *The Mentally Ill in America*, New York, Doubleday, Doran & Co., Inc., 1937.

PROTRUDED INTERVERTEBRAL DISKS

REPORT OF ONE HUNDRED CASES IN WHICH
OPERATION WAS PERFORMED

J. GRAFTON LOVE, M.D.

AND

MAURICE N. WALSH, M.D.

ROCHESTER, MINN.

This report is based on a study of the first 100 cases of protrusion of one or more intervertebral disks in which patients were operated on at the Mayo Clinic. The purpose of the study was to survey this group of cases from a neurologic standpoint and to attempt to clarify, if possible, certain features of the problem of protruded disks.

A complete review of the already voluminous literature on this subject will not be attempted here, and mention will be made only of some of the most important contributions: The earliest mention of extrusion of cartilage from an intervertebral disk due to trauma was

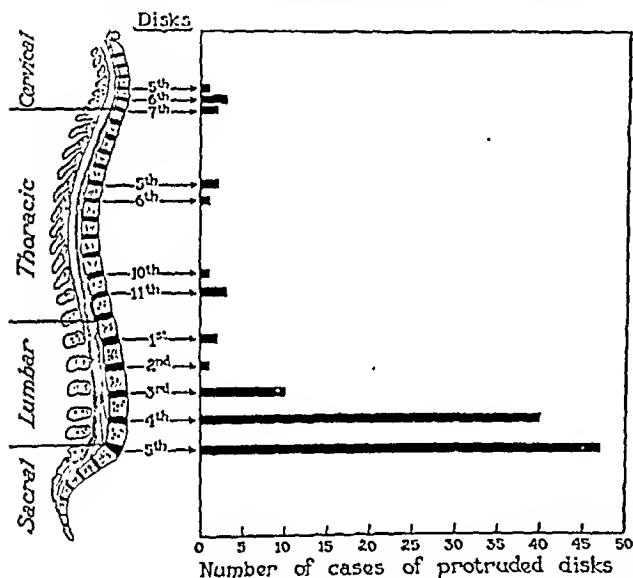


Fig. 1.—Diagram showing, on the left, a drawing of a median section of the normal spinal column and, on the right, the interspaces and the numbers of protruded intervertebral disks which occurred in those interspaces. (Note: In the 100 cases reported on in this paper there occurred a total of 113 protruded disks, and it is the 113 protruded disks that are here plotted.)

made by Virchow¹ in 1857. Goldthwaite,² in 1911 apparently was the first to direct attention to the possible importance of the condition in producing compression of spinal nerve roots within the spinal canal. In the same year Middleton and Teacher³ reported a case (with the results of postmortem examination) in which they attributed the patient's symptoms to protrusion of such an intervertebral disk within the spinal canal. Adson⁴ in 1925 reported removal of a cartilaginous mass arising from an intervertebral disk which had compressed the cervical cord and produced symp-

toms and signs characteristic of cervical cord tumor. Stookey⁵ in 1928 reported a series of seven cases of protruded cervical intervertebral disks producing compression of the cord, and Dandy⁶ in 1929 reported two cases of paraplegia in which he had discovered protrusion of a lumbar intervertebral disk. Mixter and Barr⁷ in 1934 then reported a series of cases of protrusion of the intervertebral disks with the production of clinical symptoms and discussed the diagnosis and operative treatment. In the past three years the papers of Hampton and Robinson,⁸ Love,⁹ Love and Camp,¹⁰ and Camp¹¹ have dealt with various aspects of the problem of protruded disks.

For many years neurosurgeons at the clinic have at intervals removed from the spinal canal extradural fibrocartilaginous masses originating from the intervertebral disks, the operation being performed to relieve compression of the spinal cord. In the past few years attention has been directed to the true nature of these masses as protrusions from the intervertebral disks. With improvement in diagnostic methods and with introduction of the use of iodized oil it has been possible to detect the presence of earlier lesions, and the condition has been found to be much more frequent than was formerly suspected. It may safely be said that, today, protrusion of intervertebral disks constitutes one of the major causes of sciatic pain. Indeed, it is quite as antiquated to make a diagnosis of "sciatica" today as it is to make a diagnosis of "headache."

Five cases were not included in the present series because, although clinical and iodized oil studies indicated the presence of protruded disks, the slight protrusion discovered at operation did not seem sufficient to cause the symptoms and signs presented. Further observations will be necessary before these cases can be included in the series as definite ones of protruded intervertebral disks.

The total number of intervertebral disks found in these 100 cases was 113. In eighty-eight cases there was protrusion of only a single disk, and in six of these cases the protrusion was in the cervical region, in six in the thoracic region and in seventy-six cases in the lumbar region. In all of the latter cases except one the multiple protruded disks occurred in the lumbar region, the exception occurring in the eleventh thoracic interspace. There were thirty-nine (34.5 per cent) protrusions of the fourth lumbar intervertebral disk; forty-seven (41.6 per cent) of the total of 113 protruded disks occurring in the fifth intervertebral space.

It is interesting to note that these protruded disks tended to group themselves in relation to the normal curves of the vertebral column, in the region of the greatest convexity or concavity (fig. 1). Protruded disks in the cervical region, for example, tended to occur

5. Stookey, Byron: Compression of the Spinal Cord Due to Ventral Extradural Cervical Chondromas; Diagnosis and Surgical Treatment. *Arch. Neurol. & Psychiat.* 20: 275-291 (Aug.) 1928.
6. Dandy, W. E.: Loose Cartilage from Intervertebral Disk Simulating Tumor of the Spinal Cord. *Arch. Surg.* 19: 660-672 (Oct.) 1929.
7. Mixter, W. J., and Barr, J. S.: Rupture of the Intervertebral Disk with Involvement of the Spinal Canal. *New England J. Med.* 211: 219-215 (Aug. 2) 1934.

8. Hampton, A. O., and Robinson, J. M.: The Roentgenographic Demonstration of Rupture of the Intervertebral Disk into the Spinal Canal After the Injection of Lipiodol, with Special Reference to Lateral Lumbar Lesions Accompanied by Low Back Pain with "Sciatic" Radiation. *Am. J. Roentgenol.* 36: 782-803 (Dec.) 1936.

9. Love, J. G.: (a) Protrusion of the Intervertebral Disk (Fibrocartilage) into the Spinal Canal. *Proc. Staff Meet., Mayo Clin.* 11: 527-535 (Aug. 19) 1936; (b) Role of Intervertebral Disks in the Production of Chronic Low Back and Sciatic Pain. *Ibid.* 12: 369-372 (June 16) 1937.

10. Love, J. G., and Camp, J. D.: Root Pain Resulting from Intervertebral Protrusion of Intervertebral Disks; Diagnosis and Surgical Treatment. *J. Bone & Joint Surg.* 19: 776-801 (July 4) 1937.

11. Camp, J. D.: Roentgenologic Findings in Cases of Protruded Disks. *Proc. Staff Meet., Mayo Clin.* 12: 373-377 (June 16) 1937.

From the Section on Neurosurgery (Dr. Love) and the Section on Neurology (Dr. Walsh), the Mayo Clinic.

1. Virchow, R. L. K.: Untersuchungen über die Entwicklung des Schädelforms im gesunden und krankhaften Zustande und über den Einfluss derselben auf Schädelform, Gesichtsbildung und Gehirnbau. Berlin, G. Reimer, 1857.

2. Goldthwaite, J. E.: The Lumbosacral Articulation: An Explanation of Many Cases of "Lumbago," "Sciatica" and Paraplegia. *Boston Med. & S. J.* 164: 365-372 (March 16) 1911.

3. Middleton, G. S., and Teacher, J. H.: Injury of the Spinal Cord Due to Rupture of an Intervertebral Disk During Muscular Effort. *Glasgow M. J.* 76: 1-6, 1911.

4. Adson, A. W.: Diagnosis and Treatment of Tumors of the Spinal Cord. *Northwest Med.* 24: 309-317 (July) 1925.

the convexity in that region, whereas in the region of the greatest concavity in the midthoracic portion of the vertebral column occurred another group of protruded disks. The greatest number of protruded disks in the lower portion of the vertebral column, however, occurred in the lumbar and lower thoracic region, particularly in the lower lumbar region where there is the greatest convexity. It can readily be seen, of course, that it is in these regions that the greatest mechanical stress is placed on the vertebral column by heavy lifting or pushing. Thus indirect evidence is given to support the claim that, in most cases at least, protrusion of an intervertebral disk is secondary to mechanical trauma.

Of the 100 patients, seventy-seven were males, twenty-three females. This predominance of males is probably the result of the fact that males are more liable to injuries of the back. The average age of the patient at the time of operation was 39.88 years, the distribution by decades being as follows: first decade none, second decade one, third decade twenty, fourth decade thirty-four, fifth decade twenty-three, sixth decade eighteen, seventh decade three, and eighth decade one. Thus most of the patients were in the fourth decade of life.

ETIOLOGY

It is the opinion of most authors that abnormal protrusion of an intervertebral disk into the spinal canal is in the majority of cases the result of trauma. Schmorl¹² advanced the idea that in some cases degenerative changes in the annulus fibrosus which may be due to trauma or possibly to constitutional factors may predispose to the protrusion of the nucleus pulposus as a result of further trauma. It is probable that repeated trauma may be necessary in many cases to produce sufficient protrusion of the nucleus pulposus to cause clinical symptoms. In only thirty-two (32 per cent) of the 100 cases in this series did the patient feel that his pain or other symptoms began immediately after a certain injury. In thirty-nine cases, however, the patient remembered one or more injuries but could not say whether the symptoms had begun immediately afterward or even within the next few months. In twenty-nine cases there was no history of injury the patient could recall. This would lead one to suspect that in many cases, at least, it is difficult to say that a certain injury had caused protrusion of the disk.

SYMPTOMS

The average duration of symptoms before operation in these 100 cases was four years; the shortest duration was one month, the longest thirty-two years. Nocturnal pain was present in twenty-nine cases, and aggravation of pain on coughing or sneezing occurred in thirty-six.

In eighty-four cases there was a definite history of intermittence of symptoms. This was most marked in the case of lumbar protrusions, in which 86.3 per cent of the patients gave a history of recurrent episodes of pain and other symptoms. In some cases many such episodes occurred before the proper diagnosis finally was made and treatment given. In one case almost yearly exacerbations of symptoms occurred for thirty-two years before the protruded lumbar disk was finally removed. In many cases, between recurrences of symp-

toms, the patient felt quite well. Frequently a recurrence of symptoms followed trauma to the back or heavy lifting.

If it is assumed that the nucleus pulposus, once protruded, thereafter remains permanently in the spinal canal, it is quite difficult to explain the periodic disappearance of symptoms which is so frequent in these cases. We feel that it is probable that the protruded nucleus pulposus in many cases returns into the intervertebral space, only to be extruded again by additional trauma. Schachtschneider¹³ stated that he has noted in vertebral columns fresh from cadavers a partial return of a protruded nucleus pulposus into the intervertebral space following kyphotic flexion of the vertebral column. He believed that negative exploration might result if kyphotic flexion was produced prior to operation. In a cadaver in our anatomic laboratory, a protruded fourth lumbar intervertebral disk was found during dissection of the lumbar nerve roots. The patient had a history of injury to the back with some subsequent back pain a year before death. Further details could not be learned. After exposure of the protruded disk in the course of routine dissection, it was decided to try the effect of kyphotic flexion and extension of the back. Kyphotic flexion caused the protruded disk to be drawn in, so that it was almost level with the posterior surfaces of the vertebral bodies. Hyperextension of the spinal column, on the contrary, caused the disk to protrude markedly. These observations agree with those of Schachtschneider.¹³

It is quite possible that the nerve root may be decompressed and the symptoms temporarily relieved by sliding the root away from between the protruded disk and the pedicle of the vertebra. This, however, has not been verified. Some of the dramatic recoveries reported by irregular practitioners may be the result of the return of the protrusion to the intervertebral space, thus freeing the nerve root of pressure. In eight of our 100 cases the patient said that the onset of symptoms was immediately preceded by a sensation of something snapping out of place or "giving" in the back. All of these were cases of lumbar disk protrusion. At operation, in four, or 50 per cent, of these cases the disk protruded itself, in one case on retraction of the nerve root and in three on incision of the posterior longitudinal ligament. In one case the disk was fibrous and curettage was necessary, whereas in one case the protrusion was firm and suggested bone.

A young woman recently seen at the clinic voluntarily stated that she felt as if she had a displaced piece of cartilage in her back. She had not consulted a physician previously and knew nothing of protruded disks. Studies with iodized oil followed by operation proved that she did, indeed, have a protruded lumbar disk. In this connection it may be noted that orthopedic manipulation in cases of protruded disk is attended with some risk because of the danger of paraplegia, as in the case reported by Goldthwaite.²

PROTRUDED CERVICAL AND THORACIC INTER- VERTEBRAL DISKS

There were six cases of protruded disks in the cervical region and six of protruded disks in the thoracic region. In one of the latter cases, posterior protrusion of the eleventh thoracic intervertebral disk was asso-

12. Schmorl, G., and Junghans, H.: Die gesunde und kranke Wirbelsäule im Röntgenbild, Leipzig, Georg Thieme, 1932.

13. Schachtschneider, H.: Der hintere Bandscheibenvorfall in seinen klinischen Auswicklungen, Fortschr. a. d. Geb. d. Röntgenstrahlen 54: 107-129 (Aug.) 1936.

INTERVERTEBRAL DISKS—LOVE AND WALSH

Jour. A. M.
July 30, 1

ciated with an endothelioma of the tenth nerve root on the left. The average duration of symptoms in cases of cervical protrusion was twelve months; the shortest duration was one month and the longest 2.6 years. The average duration of symptoms in cases of thoracic protrusion was thirty-eight months, the shortest duration being ten months and the longest eighty-four months. It was interesting to note that the length of time that elapsed between the onset of symptoms and the time of operation increases as one progresses downward from the cervical to the lumbar region. Interruption of symptoms was noted in seven cases, occurring in three of the six cases of thoracic protrusions and in four of the six cases of cervical protrusions. In no case of protruded cervical disk was a history of injury definitely connected with the onset of symptoms. In three of the cases in this group there was no history of injury at all. In two cases of protruded thoracic disks there was a history of injury which was definitely related to the onset of symptoms. In two other cases there was no history of injury whatever, while in the remaining two cases the history of injury could not be connected with the onset of symptoms.

Two of the patients with cervical protruded disks had no pain whatever and one had only slight pain. Thus half of the patients in this group did not have radicular pain. Of the six patients with thoracic protruded disks, one with a protruded fifth thoracic disk had noted no pain. Another patient, also with a protruded fifth thoracic disk on the right side, had very slight pain. Still another patient with a protruded sixth thoracic disk had very slight pain. The remaining three patients complained of pain of a radicular character.

Neurologic examination in these cases of protruded cervical or thoracic intervertebral disks gave evidence of extradural compression of the spinal cord. The neurologic observations will not be reviewed here since they are those usually encountered in cases of extradural tumor. It is probable that the neurologic observations will be fewer if the patient is examined during a remission than during an exacerbation of symptoms.

Examination of Spinal Fluid.—In these twelve cases of protruded cervical and thoracic intervertebral disks the responses to jugular pressure were not studied in two cases. In the remaining ten, five (50 per cent) showed some evidence of subarachnoid block. In only two cases was there complete block. The cell count was uniformly within normal limits. The total protein of the spinal fluid was studied in seven of these twelve cases: it was more than 40 mg. per hundred cubic centimeters in five cases and was exactly 40 mg. in two cases. The colloidal gold, Wassermann and Nonne tests were of no assistance in the diagnosis in these cases.

PROTRUDED LUMBAR INTERVERTEBRAL DISKS

There were eighty-eight cases of protruded lumbar disks, a total of 100 protruded disks being found at operation in this group of cases. There were two cases of protrusion of the first lumbar intervertebral disk, one of the second, ten of the third, forty of the fourth and forty-seven of the fifth. There were two cases of single protrusion of the first lumbar disk, five of single protrusion of the third lumbar disk, twenty-nine of single protrusion of the fourth lumbar disk and forty cases of single protrusion of the fifth lumbar disk. There were twelve cases of multiple protruded lumbar disks.

A history of injury was definitely connected with the onset of symptoms in thirty cases (34 per cent). There was no history of injury in twenty-four, or 27 per cent of the cases, as shown in the table. The remaining patients gave a history of one or more injuries which could not be definitely connected with the onset of symptoms. Seventy-six (86 per cent) of the patients in this group gave a history of recurrent episodes of pain and other symptoms, with normal or nearly normal periods between. Eight patients stated that they had felt something snap or give way in the back immediately prior to the onset of symptoms. Unilateral sciatic pain was complained of by fifty-nine of the eighty-eight patients (68 per cent). Bilateral sciatic pain was noted in twenty-two cases (25 per cent). There was no sciatic projection of the pain in seven cases.

Night pain was complained of in twenty-seven (31 per cent) of the eighty-eight cases in this group. Pain was aggravated by coughing, sneezing or straining in thirty-four cases (39 per cent). Paresthesias were complained of in forty-three cases (49 per cent) while sphincteric disturbances were noted in only seven (8 per cent).

In one case of a protruded first lumbar disk there was bilateral sciatic pain associated with low back pain. In the other case of protruded first lumbar disk there was pain in the rectal area and pain in the lateral and

Summary of History and Neurologic Observations in Eighty-Eight Cases of Protruded Lumbar Intervertebral Disk

	Cases	Per Cent
No injury.....	24	27
Symptoms intermittent.....	76	86
Low back pain preceding extension of pain.....	51	58
Low back pain without extension.....	81	92
Night pain.....	3	3
Accentuation of pain on coughing, sneezing and so on.....	27	31
Paresthesias.....	34	39
Sphincteric incontinence.....	43	49
Positive Lasègue sign.....	7	8
Sciatic tenderness.....	72	82
Achilles reflex diminished or absent.....	55	63
Muscular paresis.....	50	57
Muscular atrophy.....	23	26
Sensory loss.....	8	9
Examination objectively negative.....	27	31
Examination negative except for positive Lasègue sign or sciatic tenderness.....	3	3
	14	16

anterior regions of both thighs. Of the five cases of protruded third lumbar disks, sciatic pain was present in three. In one case low back pain alone was complained of while, in another, the pain began at the groin and was projected into the testis and down the anteromedial surface of the thigh of one side. In cases of single protrusions of the fourth or fifth lumbar disks, sciatic pain was complained of by all but three patients. In two of these cases low back pain alone was complained of, while in the other rectal pain radiating to the right buttock was noted. In all of these three cases there was protrusion of the fifth lumbar intervertebral disk. In cases of multiple protruded lumbar disks, sciatic pain was present in all but one case. In this case, in which protrusion was of the fourth and fifth intervertebral disks to the left, the pain began in the sacrum and was projected around the left groin and down the internal surface of the thigh, leg and ankle.

It should be noted that in only seven (8 per cent) of the eighty-eight cases in this group was there no sciatic pain. Low back pain occurred in eighty-four of the eighty-eight cases. In thirty-three cases (37.5 per cent) the low back pain occurred at the same time

as the extension or projection of the pain. In fifty-one cases pain in the back preceded extension by a variable interval, the average interval being four years. During this time many of the patients suffered back injuries.

It is possible that low back pain is the result of pressure of the protruded cartilage on the posterior longitudinal ligament, whereas extension of the pain along the course of a nerve, such as the sciatic, may be due to further protrusion of the cartilaginous mass, with compression of one or more nerve roots. It should be emphasized that a patient who complains of an unusual or bizarre projection of pain in all probability does not have a protruded disk in the lumbar region, although this cannot be definitely excluded.

An attempt was made to discover whether the location of the paresthesias might be helpful in determining the exact interspace of disk protrusion. This was found to be impossible. The paresthesias, however, may give some general indication in what part of the vertebral column the protruded disk may be found. Flexion of the head on the neck produced the type of pain of which the patient complained in two cases of protrusion of a fourth lumbar disk and in one of protrusion of the fifth lumbar disk. In two of these cases the caudal roots were noted to be markedly inflamed and adhesions were present.

Analysis of Neurologic Observations in These Eighty-Eight Cases of Protruded Lumbar Disks.—The Lasègue sign, or the production of pain on raising the straightened leg, was positive in seventy-two cases (82 per cent). Sciatic tenderness was present in fifty-five cases (63 per cent). The achilles reflex was diminished or absent in fifty cases (57 per cent). The hamstring reflexes were diminished in twenty-four cases (27 per cent). Definite weakness of one or more muscles was present in twenty-three cases (26 per cent). Sensory disturbances, constituting a diminution in pain, temperature or touch sensation, were present in twenty-seven cases (31 per cent). Muscular atrophy occurred in eight cases (9 per cent).

In a small number of cases, fibrillary twitchings were noted in the muscles of the calf and in the peroneal muscles; these frequently occurred in cases in which there was also some muscular atrophy and are probably to be explained on the basis of root irritation. An effort was made to localize accurately the position of the protruded disk by means of the reflex changes, muscular weakness and segmental sensory loss, when such occurred, but this was found to be impossible, as there were no characteristic sensory or motor changes which would make it possible to localize the lesion accurately by physical examination alone without the assistance of study with iodized oil.

In only one of our cases did we find a segmental sensory loss higher than that of the lesion actually found at operation. This occurred in a case of single protrusion of the third lumbar intervertebral disk in which a sensory diminution in the first, second and third lumbar dermatomes and first and second sacral dermatomes was found on examination. We can offer no adequate explanation for the conditions present in this case. In the majority of cases the sensory impairment occurred in the sacral dermatomes, usually several segments below the level of the actual lesion. This may be explained by pressure on the roots of the cauda equina as they pass over the protruded disk. Unilateral

diminution of the patellar reflex occurred in eight cases of protruded lumbar disks. In two of these cases there was a single protrusion of the third lumbar disk, in three cases there was a single protrusion of the fourth lumbar disk, and in two cases there was a single protrusion of the fifth lumbar disk. Another reason why muscular weakness and reflex changes were not of assistance in accurately localizing the interspace in which the disk had protruded was that several nerve roots frequently supply the same muscle or may be responsible for the integrity of a certain reflex. However, reflex changes, muscular weakness and sensory impairment give excellent evidence as to the general region of the spinal column in which the protrusion of the disk may be found.

In three of the eighty-eight cases of protruded lumbar disks the neurologic examination was objectively negative, whereas in fourteen cases it was negative except for a positive Lasègue sign, or sciatic tenderness, or both. Thus, a negative neurologic examination does not definitely exclude the possibility of a protruded disk



Fig. 2.—Needles in place for performance of the reversed Queckenstedt test; the point of the lumbar puncture needle to which the Ayer manometer is attached is in the lumbar subarachnoid space; the point of the caudal needle is extradural; it has been passed through the sacral hiatus.

being present, and patients with a suggestive or typical history should not be denied examination with iodized oil under these circumstances.

Examination of Spinal Fluid.—The estimation of the total protein of the cerebrospinal fluid was the only laboratory determination of value in the diagnosis of protruded disks in the lumbar region. This determination was made in eighty-four of the eighty-eight cases of protruded lumbar disks. The total protein was 40 mg. per hundred cubic centimeters or more in sixty-seven cases (80 per cent), the highest value found being 240 mg. The total protein was less than 40 mg. per hundred cubic centimeters in seventeen cases (20 per cent). Thus the finding of a value for total protein in the spinal fluid higher than 40 mg. per hundred cubic centimeters is of value in the diagnosis of protruded disk, but the finding of a value less than 40 mg. does not exclude the possibility of protruded disk.

Clinical Diagnosis.—The clinical diagnosis of protruded disk as the cause of "sciatica" is based on a history of trauma to the back with persistent or recur-

rent low back and sciatic pain, with diminished or absent achilles reflex, and an increased total protein content of the cerebrospinal fluid. If the total protein is normal or low, the reversed Queckenstedt test (fig. 2) should be positive before an attempt is made to confirm the diagnosis.¹⁰ The diagnosis is confirmed and the protruded disk identified by fluoroscopic examination of the spinal canal¹⁰ after the subarachnoid injection of iodized oil through a lumbar puncture needle. Five cubic centimeters of iodized oil is injected between the spinous processes of the third and fourth lumbar vertebrae. Care should be exercised to avoid extradural injection, and rarely is cisternal injection justified. During fluoroscopic observation of the spinal canal other lesions such as neoplasm and multiple protrusions of the intervertebral disks should be looked for.

If on examination of the movements of the opaque oil in the spinal canal a persistent defect characteristic of protruded disk is observed, and if a lesion located at that level could account for the patient's pain, surgical removal of the protruded portion of the disk is indicated.

Operative Procedure.—The operative procedure consists of either extradural or transdural removal of the protruded portion of the disk through a laminectomy wound. Removal of the spines and laminae of two vertebrae provides adequate exposure for the removal of a single protrusion; in cases of multiple protrusions between adjacent vertebrae, three spines and laminae must be removed. In one case of multiple protrusions one of us (Love) did a double laminectomy because one protrusion was at the lumbosacral space and the other was low in the thoracic region.

In performing laminectomy the articulating facets should be preserved. Resection of the ligamenta flava, which are usually thickened in cases of protruded disks, affords adequate exposure for the extradural removal of the lateral protrusions. In case the lesion presents in the midline, it is best to approach it transdurally, and in this event a wide laminectomy is not necessary. The iodized oil is carefully removed at the time of laminectomy.

No fixation of the spine, by bone graft, cast or even belt, is necessary following removal of a protruded disk. In our series of 100 cases we have not found it necessary or advisable to carry out fusion.

The patients are treated postoperatively the same as after simple laminectomy for tumor of the spinal cord. They are kept in bed twelve days and allowed to leave the hospital on the fourteenth day and to return to their homes three weeks after the operation has been performed. They are advised to refrain from heavy lifting and straining for a period of three months.

COMMENT

The surgical removal through a laminectomy wound of the protruded portion of an intervertebral disk that is causing compression of the nerve roots or spinal cord is followed by excellent and gratifying results. The patient is relieved of pain and, if irreparable damage has not been caused by the long continued pressure, motor weakness and sensory loss disappear. There has not been a single recurrence in this entire series of 100 cases. There was one postoperative death due to contamination of the wound and bronchopneumonia.

SILICOSIS AND SILICOTUBERCULOSIS

HENRY K. TAYLOR, M.D.

AND

HYMAN ALEXANDER, M.D.

Director and Resident, Respectively, Department of Radiology,
Sea View Hospital
NEW YORK

Within the past few years extensive investigation of the harmful effects of dusts and the comparatively recent recognition of silicosis as a true occupational disease have stimulated the interest of physicians and industrialists toward this important and interesting problem.

Mention of the effects of exposure to excessive amounts of dust has been found in the writings of observers dating back to ancient times. Agricola¹ described mining as a dangerous occupation. Paracelsus¹ described the chronic lung trouble of miners as "lung consumption," "asthma" and "dyspnea."

The first recorded section of a stonecutter's lung was made in 1649 by Diemerbroeck.¹ He found in cutting through the lung that there was a definite feeling of resistance to the knife. It felt as though he were cutting through some sandy body. Ramazzini¹ was the first to recognize the significance of industrial disease from chemical substances. He made an intensive study of the harmful effects of dust on the respiratory system. He found deposits of silica in the lungs of stonecutters. Willis² cites many more interesting observations by numerous workers down through the ages.

Silicosis may be defined as a pathologic condition of the lungs due to the inhalation of silicon dioxide. It can be produced experimentally in animals.

The greatest number of studies on silicosis have been made in Great Britain, Germany, Australia, South Africa, Italy, Canada and the United States. The disease has been reported among workers in the following industries:

1. Mining of hard siliceous rock (copper, gold, silver, zinc, iron and hard coal). The disease is particularly prevalent in those who do drilling and blasting.
2. Quarrying of granite, sandstone, limestone, quartz, slate, rock and crystal.
3. Stone finishing and dressing siliceous rock such as granite and sandstone.
4. Pottery making.
5. Making of abrasives: sand, sandpaper and scouring powders.
6. Glass manufacturing.
7. Working with mineral earth.
8. Spray coating (plumbing materials).
9. Manufacturing of silica bricks.
10. Construction work (subways, tunnels).

In this country there are about 500,000 workers who are exposed to silica dust.² Sladden's⁴ series of eighty-three cases among coal miners in Great Britain revealed

Read in part before the Sea View Hospital Clinical Society, March 25, 1937.

The members of the various medical services and Dr. Oscar Auerbach and his staff from the department of pathology at Sea View Hospital cooperated in the work reported.

1. Review of the Literature on the Effects of Breathing Dusts with Special Reference to Silicosis, United States Bureau of Mines, I. C. 653, March 1935.

2. Willis, H. S.: Pneumoconiosis and Tuberculosis, Medicine 60: 502 (Dec.) 1930.

3. Lanza, A. J., and Vane, R. J.: The Prevalence of Silicosis in the General Population and Its Effect on the Incidence of Tuberculosis, Am. Rev. Tuberc. 29: 8-16 (Jan.) 1934. Lanza, A. J.: Clinical Features and Industrial Significance of Silicosis, New York State J. Med. 30: 1386-1388 (Oct. 1) 1936.

4. Dust Prevention in the Coal Industry, Colliery Guardian 144: 67, 99, 1932.

at autopsy an incidence of silicosis of 61 per cent. Haldane's⁴ studies on exactly the same number of cases revealed an incidence of 36 per cent. Sutherland and Bryson⁵ found that one out of four men among sandstone workers had "Mason's disease." During 1925 and 1926 Nelson⁶ found that 19.6 per cent of 4,067 men working in the Australian gold mining industry showed definite evidences of silicosis. The report of the Miner's Phthisis Bureau⁷ in South Africa revealed that during the period from 1912 to 1916 there was a yearly average of 800 new cases of silicosis and tuberculosis. From 1920 to 1923 there was a yearly average of 251 new cases. In the period 1930-1931 the number of cases was even lower.

The first American study of silicosis in miners was made by Lanza and Higgins⁸ in 1914 and 1915. Of 720 miners examined 45.7 per cent had silicosis, 14.5 per cent had silicosis and tuberculosis and 5.4 per cent had tuberculosis alone. At the Picher Camp of the Tri-State District of Oklahoma, Kansas and Missouri,⁹ 27,553 miners were examined from 1927 to 1932. Of this number 5,663 had silicosis, 472 had silicosis and tuberculosis and 320 had tuberculosis only. The statistics of Smith and Fehnel¹⁰ reveal that of 208 drillers, blasters and excavators employed in New York City 57 per cent showed silicosis in various stages of the disease.

It is generally agreed by the majority of authors wherever extensive investigations on silicosis have been carried on that the special form of fibrosis characteristic of silicosis is produced only by uncombined silicon dioxide. A challenge to this conception of the etiologic factor in the production of the disease was issued by Jones¹¹ in 1933 as a result of his work with sericite. Sericite is also known as white mica and is the hydrated silicate of aluminum and magnesium. Jones found a high incidence of silicosis wherever miners encountered rock rich in sericite, and in mining localities where the rock contained a high percentage of silica but had no sericite in it no silicosis was found.

Lemon and Higgins¹² conducted a series of experiments in which they injected sericite into the lungs of rabbits through an intratracheal catheter. After the animals were killed it was found that none of the pulmonary lesions produced were similar to the silicosis found either in experimental animals or in man. In a previous group of similar experiments in which they used boro silicate glass and aluminum oxide, Lemon and Higgins¹³ were also unable to produce lesions typical of silicosis.

Experiments by other investigators have also failed to verify the observations made by Jones. At the pres-

ent time workers in this country feel convinced that silicosis is a specific reaction to silicon dioxide.

The following factors are of importance in the production of silicosis:

1. The size of the dust particle. It is the consensus that particles up to 10 microns in diameter are of importance in the production of silicosis. Sappington¹⁴ believes that only those particles with a diameter of less than 5 microns are capable of entering the pulmonary alveoli and causing damage.

2. The number of particles per cubic foot of air. According to Dreessen and Jones,¹⁵ significant pulmonary fibrosis has not been found in persons exposed to less than 5,000,000 particles of dust per cubic foot of air. In any consideration of the actual dust count for a given volume of air, it must be borne in mind that the percentage of free silica in the dust is the factor of paramount importance. Gardner¹⁶ has produced silicosis experimentally in animals by exposing them to concentrations of 200 million dust particles per cubic foot of air for a period of twelve months.

3. Mineral content of rock. Quartz, which contains 100 per cent of free silica, constitutes the most serious of silicosis hazards. Granite contains between 50 and 60 per cent of free silica and is also a serious silicosis hazard. Cement contains a small amount of silicon dioxide and is consequently considered as a slight silicosis hazard by some authorities and as no hazard at all by others. The kind of rock must be known in order to determine whether the dust it produces can cause silicosis in persons who are exposed to it.

4. The length of exposure. It was formerly believed that exposure of at least ten years' duration was necessary for the production of silicosis. It is current opinion that with exposure to sufficient concentrations of dusts containing a high percentage of free silica the disease may develop in a considerably shorter period. Gardner¹⁶ has produced silicosis in animals in from twelve to eighteen months. Lanza¹⁷ feels that two years' exposure usually is the shortest period of time for the development of silicosis. An acute form of silicosis has been described in which the disease develops in less than one year of exposure to an intense concentration of dust that is high in the content of free silica. One of us (H. K. T.) examined three men employed in the Gawley bridge tunnel. In one of these men there was a history of six weeks' exposure; he presented clinical evidences of silicosis. A second man worked as a rock driller for four months; he presented definite clinical and roentgen evidences of silicosis. The third man, who worked as a water carrier for one year, presented clinical and roentgenologic manifestations of advanced silicosis. Ornstein¹⁸ states that in dust containing 20 per cent of free silica with 200 million particles per cubic foot of air, the size of the particles averaging about 5 microns in diameter, it would take from four to five years for silicosis to develop.

In considering any dust, the greater the percentage of free silica and the greater the concentration of small

5. Sutherland, C. L., and Bryson, S.: Report on the Occurrence of Silicosis Among Sandstone Workers, London, 1929.

6. Nelson, W. T.: Report in an Investigation of the Pulmonary Conditions of Mine Employees—Western Australia, 1925-1926, Commonwealth of Australia Department of Health, Publication 5 (Div. Indust. Hyg.), 1927.

7. Union of South Africa: Report upon the Work of the Miner's Phthisis Medical Bureau for the Three Years Ending July 31, 1932, U. G. 22, 1933.

8. Lanza, A. J., and Higgins, Edwin: Pulmonary Disease Among Miners of the Joplin District and Its Relation to Rock Dust in the Mines, Tech. Paper 105, Bureau of Mines, 1915.

9. Meriwether, F. V.; Sayers, R. R., and Lanza, A. J.: Silicosis and Tuberculosis Among Miners in the Tri-State District of Oklahoma, Kansas and Missouri: 11, Tech. Paper 552, Bureau of Mines, 1933, pp. 7-19.

10. Smith, A. R.: Silicosis Among Rock Drillers, Blasters and Excavators in New York City, Based on a Study of 208 Examinations, J. Indust. Hyg. 11: 37-81 (Feb.) 1929.

11. Jones, W. R.: Silicotic Lungs: The Minerals They Contain, J. Hyg. 33: 307 (Aug.) 1933.

12. Lemon, W. S., and Higgins, G. M.: The Time Reaction of the Lung to the Intratracheal Injection of Particulate Sericite, Am. Rev. Tuberc. 32: 243-255 (Sept.) 1935.

13. Lemon, W. S., and Higgins, G. M.: Pulmonary Lesions Experimentally Produced by Intratracheal Introduction of Aluminum Oxide and Boro Silicate Glass, Am. Rev. Tuberc. 30: 549-560 (Nov.) 1934.

14. Sappington, C. O.: Silicosis and Other Dust Diseases, Indust. Med. 1: 158 (Dec.) 1932.

15. Dreessen, W. C., and Jones, R. R.: Anthracosilicosis, J. A. M. A. 107: 1179-1185 (Oct. 10) 1936.

16. Gardner, L. U.: Silicosis and Its Relationship to Tuberculosis, Am. Rev. Tuberc. 29: 1-17 (Jan.) 1934.

17. Sayers, R. R.; Meriwether, F. V.; Lanza, A. J., and Adams, W. W.: Silicosis and Tuberculosis Among Miners of the Tri-State District of Oklahoma, Kansas and Missouri, for Year Ending June 30, 1928, Tech. Paper 545, Bureau of Mines, 1933, p. 20.

18. Ornstein, G. G.: The Differential Diagnosis of Silicosis from Other Pulmonary Diseases, New York State J. Med. 39: 1382-1385 (Oct.) 1936.

particles per given volume of air the less will be the duration of exposure before silicosis makes its appearance.

For many years it was believed that fibrosis such as occurs in silicosis was produced in response to mechanical irritation caused by the sharp hard quartz particles. Kettle¹⁹ considers that solubility is the primary factor in the harmfulness of silica and he believes that an insoluble substance is incapable of producing silicosis. Cummins²⁰ agrees with Kettle. How silica acts in the production of fibrous tissue is not known. The action of silica in pulmonary tissue may be of a physico-chemical nature and the speed of its development depends on the rapidity with which fresh silica hydrosol is formed and brought into contact with pulmonary tissue. Substances, such as alkalis, which favor the formation of silica hydrosol accelerate the development of silicosis. Substances which retard the formation of the hydrosol from silica retard silicosis. Mavrogordato²¹ gives as the cause for simple silicosis the reaction of the

reticulo-endothelial system to the invasion of tissue by free silica.

According to Simson,²² if particles reach the alveoli, the cells lining the air spaces are stimulated to activity. They become active phagocytes and the particles are engulfed. Some of the dust-laden phagocytes pass into the terminal bronchioles and vestibules. Large numbers of dust-laden phagocytes accumulate and cause condensation of the tissue about the entrance to the primary lung unit. During the



Fig. 1.—J. McF., a white man aged 58, who had been a hard coal miner for eight years and a galvanizer for ten years, was diagnosed clinically as having silicosis. The sputum was persistently negative for tubercle bacilli. Roentgen examination revealed diffuse fibrosis with a coalescent nodular lesion in the subapical portion of the right upper lobe and emphysema and confirmed the diagnosis of silicosis. Postmortem examination showed diffuse anthracosilicosis. There was a large conglomerate nodule in the right upper lobe and dilatation and hypertrophy of the right side of the heart.

time of excessive inhalation of dust the dust cells are continually entering the condensed tissue at the terminal bronchiole of the anatomic lung unit. Other cells leave this area and enter the regional lymphatic vessels, along which they pass to the minute lymph masses that lie between the branches of the pulmonary artery and the adjacent bronchioles and the atria. The lymphoid tissue is stimulated by the dust cells and becomes hyperplastic. Aggregations of lymphoid masses are formed. These can retain only a limited number of dust cells, and with continuous arrival of more cells an overflow results. The cells in the overflow pass onward in the peribronchial and the perivascular lymphatics and are trapped in the lymph nodes at the root of the lung. In silicosis these lymph nodes are the first to show fibrosis.

These changes are interpreted by Simson as primary lesions caused by the inhalation of any injurious dust.

When the majority of the inhaled particles contain silica, a specific and localized fibrosis, recognized as the silicotic islet, develops. The first evidence of this specific lesion is seen in the aggregation of dust cells representing the site of the lymphatic mass. A small round area of fibroblasts appears in the center of an aggregation. On further development a central core of dense fibrous tissue is formed. This core becomes hyalinized and the older nodules take on the appearance of a whorl. The fully developed islet, therefore, has a central mass of dense hyaline fibrosis arranged in whorls, and this mass is surrounded by a narrow zone of concentrically arranged fibrous tissue. Occasional large and small round cells and particulate matter are scattered between the connective tissue cells and the fibrils. The nodule is surrounded by dust cells and its growth depends on the continued arrival of these cells and the subsequent extension of the fibrosis at the periphery of the nodule.

Gardner,²³ in his gross description of the silicotic lung, emphasized the extensive pleural adhesions that are found on the surface of the lung. He found that the earliest changes due to silicosis alone were small pleural and subpleural nodules of gray fibrous tissue. The tracheobronchial nodes were small but deeply pigmented and showed a few gray areas of scarring. In more advanced cases there was widespread studding of the tissues with gray black nodules which were more compact and firmer than the surrounding lung. There was usually bilateral generalized distribution of the lesions, although the apexes and the outer third of the lung were somewhat less involved. The remaining lung parenchyma was emphysematous. The tracheobronchial nodes were moderately enlarged and showed a well demarcated fibrous body surrounding a dense steel gray center.

Simson believes that silicosis may also appear as a massive type of fibrosis. The massive lesions are composed of many contiguous single and composite nodules. The intervening lung tissue is compressed and collapsed. These changes make the lung less elastic, increase its bulk, make aeration less efficient and decrease circulation through the lung. More respiratory effort is needed for sufficient oxygenation of the blood. Increased respiratory effort is required to draw into the less elastic lung the same amount of air, and an increased tidal volume is needed because of the diminished aeration and impaired circulation. As the volume of the lung is increased, the chest later becomes fixed in partial inspiration, and respiration becomes more and more diaphragmatic. There usually develops a basal pleurisy, with adhesions to the diaphragm, and the diaphragmatic breathing becomes less efficient.

It is interesting to note that Gardner²³ feels that massive conglomerate nodulation is not due to fusion of smaller nodules. He believes that massive involvement does not occur in pure silicosis. Such pathologic changes are due either to silicosis associated with a previous pulmonary inflammatory lesion or to an infection superimposed on silicosis.

SYMPTOMS

Silica may be inhaled over a considerable period of time without causing any symptoms. The symptoms about to be described may occur in any chronic pulmonary disease.

19. Kettle, E. H.: The Action of Harmful Dusts: Some Roentgenological Aspects of Silicosis. *Colliery Guardian* 148: 1096-1098, 1934.
20. Cummins, S. L.: Silicosis in Gold Miners and Coal Miners. *Am. Rev. Tuberc.* 29: 17-35 (Jan.) 1934.
21. Mavrogordato, A., quoted by United States Bureau of Mines.
22. Simson, F. W.; Strauchen, A. S., and Irving, L. G.: *Proc. Transvaal Mine M. Officer's Ass. (Spec. supp.)*, 1930.

23. Gardner, L. U.: The Pathology of Various Mineral Dust Diseases. *Safety Engineering* 67: 109-112, 1934.

1. Shortness of breath. This is the cardinal symptom of silicosis. It is often the only symptom present. The shortness of breath is aggravated on exertion. There is no orthopnea present. The dyspnea is of progressively increasing severity.

2. Chest pain. This is of frequent occurrence. The pain is generally located anteriorly. It often occurs on one side only. Its severity is usually not sufficient to keep the person from his work.

3. Cough. This symptom is a frequent one. The cough is usually unproductive. If expectoration does occur it is viscid, tenacious, somewhat bluish and difficult to expectorate.

4. Hemoptysis. This occurs more frequently than is suspected. Blood streaked sputum is fairly common.

5. Night sweats. When present they may be due to a coexisting infection, not necessarily tuberculosis.

6. Loss of weight and strength in advanced stages. The weakness is due to the dyspnea and respiratory insufficiency.

7. Gastrointestinal symptoms. These are common in the advanced stages of the disease; for example, loss of appetite, epigastric discomfort and "indigestion."

PHYSICAL MANIFESTATIONS

1. Lack of elasticity of the chest wall occurs during respiration. The impaired expansion of the chest may be extremely slight. It is usually the earliest finding.

2. There is a harsh and shortened respiratory murmur with prolonged expiration. This is characteristic and is found relatively early in the disease. In some cases the breath sounds may simply be diminished. In others they may be louder than normal.

3. Scattered rhonchi may be present.

4. In far advanced disease there may be (a) increased pulse rate, (b) localized areas of dullness in the chest and (c) definite dyspneic distress.

ROENTGEN EXAMINATION

The roentgen examination offers the best and most reliable indication of the changes that take place in silicosis.²⁴ This is especially true in the early stages. The following roentgenographic classification has been used at the Picher Clinic:²⁵

1. More fibrosis than usual: The hilar shadows are larger than normal; they are more than 7.5 cm. from the midline and cover more than two interspaces and one rib. There is thickening of the bronchial tree, and this thickening often extends into the apexes.

2. Decidedly more fibrosis than usual: This condition corresponds to the presilicotic hilar shadows, which are definitely enlarged and dense. Definite thickening of the bronchial tree is present, which extends to the periphery, involving the bronchioles and possibly the air vesicles.

3. First stage silicosis: There is an increase in the size and density of the hilar nodes. Large calcified areas are present in and around the hilar shadows. There is an increase in the size and density of the lung markings. Small shotlike areas or "beads" are found along the thickened markings. When these "beads" become noticeable along the lower portion of the lungs there is a definite first stage silicosis. The areas are fairly dense, one-eighth inch or less in diameter; they are discrete and have a fuzzy, irregular outline. These areas increase in size, number and density as the disease progresses.

4. Second stage silicosis: There is usually not much change in the hilar shadows as compared with the first stage. The "beads" along the lung markings are larger, more numerous and denser. The roentgen examination now presents a diffuse nodular lesion which is bilateral, and the lesions are of about equal density on the two sides. There are pleural adhesions to the diaphragm. The cardiac shadow is usually normal.

5. Third stage silicosis: The silicotic nodules tend to coalesce. Large irregular areas of markedly increased density are observed. These masses are usually present in the middle lung fields.

Gardner is of the opinion that without the presence of nodulation a diagnosis of silicosis is unwarranted. The changes described before the first stage are not specific for silicosis but may be found when any type of dust is inhaled in great quantities and over a sufficient period of time.

The Lanza and Childs roentgen classification of silicosis is similar to the one here described. In the first stage the lung markings show an increase in density

with small nodulations at the roots of the lungs. The diaphragm moves freely with respiration. There is no distortion of the thoracic contents.

The second stage is characterized by a symmetric dissemination of circumscribed small dense areas, usually marked at the level of the hilar regions.

The third stage shows further progression with massing of dense areas. Tracheal and mediastinal distortions appear and there

is tenting and limitation of motion of the diaphragm.

In more advanced types, large dense areas are found. These cases are called by many infective silicosis. It is very difficult to rule out tuberculosis in these cases.



Fig. 2.—I. D., a white man aged 64, a granite stonecutter for many years who used the hammer and chisel, was diagnosed clinically as having silicosis. The sputum was negative for tubercle bacilli. Roentgen examination revealed diffuse linear and nodular fibrosis and confirmed the diagnosis of silicosis.



Fig. 3.—P. D., a white man aged 28, a sand blaster for twelve years, was diagnosed clinically as having silicosis. The sputum was negative for tubercle bacilli. Roentgen examination revealed advanced silicosis, pleural adhesions and emphysema. Post-mortem examination revealed silicosis and emphysema.

24. Pancoast, H. K., and Pendergrass, E. P.: Roentgenological Aspects of Simple Silicosis and Silico Tuberculosis, *Am. Rev. Tuberc.* 29: 43-59 (Jan.) 1934.

25. Sayers, R. R.; Meriwether, F. V.; Lanza, A. J., and Adams, W. W.: Silicosis and Tuberculosis Among Miners of the Tri-State District of Oklahoma, Kansas and Missouri, Tech. Paper 552, Bureau of Mines, 1933.

The classification of Pancoast and Pendergrass²⁶ correlates the roentgen with the pathologic changes.

First Stage.—There is an increase in prominence and extent of the hilar shadows of the central zone, thickening of the truncal shadows and an increase of linear markings in the midzone. There is evidence of enlarged tracheobronchial nodes. The outermost basal trunks are not so noticeably affected as the more mesial ones. Impaired diaphragmatic excursion is not noticed in the first stage. The appearance of the first stage may be produced by many inorganic dusts besides silica. Silica, however, will produce these changes in a comparatively short time.

The appearance of the first stage may be simulated by (1) passive congestion due to cardiac disease, (2) acute and chronic respiratory infection, (3) irritation from certain gases and (4) metastatic malignancy.

Pathology of the First Stage: The numerous dust cells that have reached the tracheobronchial nodes, causing fibrosis and enlargement of these nodes, are responsible for the enlarged and dense hilar shadows.

Second Stage.—Roentgen examination reveals a typical mottling through the lungs. Small fibrotic



Fig. 4.—J. C., a white man aged 59, a rock driller and excavator for twelve years, using an electric drill, was diagnosed clinically as having silicosis. The sputum was negative for tubercle bacilli. Roentgen examination revealed advanced silicosis with emphysema. The postmortem examination showed silicosis, bronchiectasis, emphysema and emphysematous bullae.

nodules from the size of a pinhead to that of a pea are uniformly and symmetrically arranged. The mottling is more marked at the roots and less profuse at the apexes and bases. The diaphragmatic excursion is often interfered with. The descent of the diaphragm may be restricted only over the inner half.

The characteristic features of the second stage are (1) the general distribution, (2) the similarity of the

shadows as to size, shape and density and (3) the greater numbers of these shadows around the roots and lower portions of the lungs.

Pathology of the Second Stage: As the small lymphoid deposits at the junctions of the peribronchial and perivascular lymphatics accumulate dust cells they grow larger, and later fibrosis takes place. When these deposits become large enough they will cast definite shadows on roentgen examination.

The Third Stage.—The roentgen picture is that of a diffuse fibrosis with three distinct appearances:

1. The larger nodules may coalesce into large and irregular masses or be found close together.

2. There may be more or less diffuse fibrosis, with small nodules. This picture resembles extensive bilateral pulmonary tuberculosis. One cannot be certain from the roentgen examination whether a superimposed tuberculosis is present. There may be marked pleural thickening. Pleural effusion has been described.

3. There may be massive fibrosis with the appearance of extensive pulmonary consolidation. Although this may be unilateral, it is more often bilateral and symmetrical. The lesion is apt to be subapical. The pleura is often thickened. Fibrous strands radiate downward. There is often gross deformity of the diaphragm with a loss of mobility. Emphysema, especially at the bases, is always present. The differential diagnosis from tuberculosis is difficult.

Pathology of the Third Stage: The diffuse fibrosis results from the conglomeration of the smaller fibrous nodules of the second stage. The opinion expressed by Gardner and others that these large conglomerate areas are the result of a combination of silicosis and tuberculosis has already been mentioned.

DIAGNOSIS

The clinical diagnosis of the condition must be based on the history, occupational history, present illness, physical and roentgen examinations and laboratory studies. It is our opinion that the factor of prime importance in the diagnosis of silicosis is the history of exposure to siliceous dusts. A detailed occupational history is absolutely essential. The information should contain in chronologic order all occupations in which the person was engaged, the length of time spent at each position, the type of work performed and the protective measures, if any, that were used. If the man worked as a rock driller or a sand blaster, the type of rock encountered should be made known so that its free silica content may be determined. To record that a certain patient was a miner is not enough. It is important to ascertain what type of work the man did in the mine, what minerals were mined and the number of years spent underground. An estimation of the concentration of dust should be sought. It is important to know whether the individual used a jack hammer, a compressed air drill or dynamite in blasting. Miners, drillers and sand blasters have often commented that the air in which they worked was black with dust. Often protective devices were inadequate. Some of our patients stated that even though they wore masks they inhaled mouthfuls of dust. The examiner should ascertain whether wet or dry drilling was used when he questions men employed as rock drillers.

DIFFERENTIAL DIAGNOSIS

Several conditions must be ruled out before the diagnosis of silicosis can be made with certainty. According to Sappington,¹⁴ the more important of these are:

1. Generalized pulmonary carcinomatosis.
2. Syphilis of the lung. This condition is extremely rare and is accompanied by other manifestations of syphilitic infection.
3. Miliary tuberculosis of the lung and tuberculous bronchopneumonia.
4. Pulmonary aspergillosis.

The emphasis that Pancoast and Pendergrass²⁶ place on the fact that the picture of first stage silicosis may be simulated by chronic passive congestion, respiratory infection, irritation from certain gases and metastatic malignant growths must be borne in mind.

COMPLICATIONS

The increased incidence of acute and chronic respiratory diseases in men engaged in dusty occupations (miners, stone masons, sand blasters, rock drillers, pottery workers) has been reported from all parts of the world. Pneumonia, bronchitis, asthma, emphysema and

26. Pancoast, H. K., and Pendergrass, E. P.: *Pneumoconiosis (Silicosis)*, New York, Paul B. Hoeber, Inc., 1926.

pulmonary tuberculosis are prevalent among miners. Pneumonia is very common among young persons. These patients usually do not survive the infection.

Secondary bacterial invasion may cause still greater damage to the silicotic lung. A chronic bronchitis or bronchiectasis may develop as the result of invasion by streptococci, staphylococci or pneumococci. In general, the silicotic lung is more susceptible to bacterial infection than the average lung. This is probably due to



Fig. 5.—M. V., a white man aged 28, a stonecutter for ten years, was diagnosed clinically as having silicotuberculosis. The sputum was positive for tubercle bacilli. Roentgen examination confirmed the diagnosis of silicotuberculosis. Postmortem examination showed pulmonary tuberculosis with cavitation in the right lower lobe and silicosis.

The prognosis of silicosis is poor. Once the disease is established it progresses slowly, even if the person is removed from his dusty occupation. There may be absence of exposure for twenty years before symptoms appear.

TREATMENT

There is no treatment for silicosis. All hope to stem the disease lies in preventive measures. Fans, exhaust pumps and filters of various types have decreased the concentration of dust in plants in which silicosis is a hazard. Personal respiratory protection such as masks should be offered to men working in dusty industries. Changes of occupation in plants should be provided for. At the earliest signs suggestive of silicosis, a man should leave the dust industry and seek occupation elsewhere.

We have mentioned the decided decrease within the past few years of silicosis in South Africa. Hildick-Smith²⁸ believes that in time silicosis will cease to be a matter of serious concern to the mining industry in South Africa. He feels that this will be accomplished by the elimination of dust from the underground air.

SILICOTUBERCULOSIS

Investigators in all parts of the world have continually stressed the fact that the incidence of tuberculosis among persons with silicosis is considerably higher than among the rest of the population. This conception is almost universally accepted. The phrase "increased susceptibility to tuberculosis" is included in the definition of silicosis as given by the United States Public Health Service. It is also generally agreed that

the irritation of the respiratory tissues by inhaled dust particles, which renders the mucous membrane susceptible to infection. The toxic influence of certain organic dusts on tissue may be an influencing factor.²⁷ Bronchiectasis, lung abscess and gangrene of the lung occur frequently in miners of hard rock.

Failure of the right side of the heart is frequently a terminal event and the immediate cause of death of patients suffering from silicosis.

a large percentage of persons with silicosis die from a superimposed tuberculous disease. According to Gardner¹⁶ at least 75 per cent of those in whom silicosis develops die of tuberculosis, which may make its appearance at any stage of the disease. In many reported series the diagnosis of silicotuberculosis was made from the history, physical manifestations and roentgen examinations. In scanning the literature we are impressed by the infrequency with which reports are based on autopsy material. Gardner²⁹ believes that tuberculosis superimposed on silicosis is of the proliferative type. In his experience with silicotuberculosis there is little exudation and caseation. Tubercle bacilli may not be demonstrated in the sputum for many years. He claims that cavities, if they do occur, are late manifestations. Under these circumstances we are led to assume that the diagnosis of tuberculosis superimposed on silicosis can be made only by symptoms and roentgen examinations. In our discussion on the symptomatology of silicosis we mentioned the fact that these symptoms may occur in any chronic disease of the lung. Lanza³⁰ points out that infection from silicosis manifests itself by the appearance of night sweats, loss of weight, profuse expectoration and the presence of rales. He further states that infection, if it does occur in silicosis, is usually tuberculous. The conditions mentioned by Lanza may occur in any pulmonary infection and are not at all pathognomonic of tuberculosis. In view of the frequency of non-tuberculous chronic pulmonary infection such as bronchiectasis or lung abscess complicating silicosis, we are not convinced that the diagnosis of tuberculosis superimposed on silicosis can be made with any degree of accuracy on the appearance of these manifestations.

The roentgen diagnosis of a fibrotic type of tuberculosis superimposed on a silicotic lung, which is in itself a fibrosed

lung, appears to us to be exceedingly difficult and almost impossible to make with any degree of certainty. It must be borne in mind that silicosis is a progressive disease and that the fibrotic changes in the lung spread slowly and eventually involve large areas, areas in which one ordinarily expects tuberculous changes to take place. Ornstein stresses these difficulties in the clinical diagnosis of tuberculosis and feels that, because of these barriers, errors in diagnosis are frequently made. It is therefore



Fig. 6.—N. P., a white man aged 53, a driller and loader in a coal mine for twenty-two years, who used an electric drill, was diagnosed clinically as having silicotuberculosis. The sputum was positive for tubercle bacilli (Gaffky 2 to 4). Roentgen examination revealed diffuse nodular fibrosis, thickened pleura with adhesions on the left side and silicosis. Postmortem examination showed pulmonary tuberculosis with excavation in the left upper lobe, silicosis, tuberculous empyema and sanguineous pleurisy.

a possibility that these statistical studies on silicotuberculosis which are based on clinical and roentgen studies

29. Gardner, L. U.: *The Pathology of Pneumoconiosis*, New York State J. Med. 36: 1377-1381 (Oct. 1) 1936.

28. Hildick-Smith: *Miners' Phthisis*, South African Mining & Engineering J., March 10, 1934, p. 32.

30. Lanza, A. J.: *Clinical Features and Industrial Significance of Silicosis*, New York State J. Med. 36: 1386-1388 (Oct. 1) 1936.

alone are not very accurate. Ornstein¹⁸ reported 110 cases admitted with the diagnosis of silicotuberculosis to the tuberculosis services of two hospitals in New York City. Some of these cases were diagnosed at the tuberculosis clinics of the health department, where the clinic physicians specialize in diseases of the chest. In other instances the diagnosis was made by private physicians. In fifty-one of these cases, after a careful study, the diagnosis of silicosis was excluded. Of the remaining fifty-nine cases, thirteen were found to give no evidence of clinical tuberculosis but showed far advanced silicosis. This left forty-six out of the original 110 cases in which men doing an extensive amount of work on chests felt that the diagnosis of silicotuberculosis was justifiable. This adds to the impression that statistics based on clinical methods cannot be accepted as entirely accurate. We feel that Ornstein is justified in his belief that no clinical diagnosis of active tuberculosis should be made when there is copious expectoration and when persistent examination of the sputum fails to reveal tubercle bacilli. His second axiom, that the diagnosis of silicosis cannot be made without a history of definite exposure to silica dust,

is also well taken. If these points are constantly kept in mind, it seems plausible that the number of reported cases of definite silicotuberculosis will become noticeably smaller and that the almost universally accepted present day theory that tuberculosis eventually develops in a large percentage of persons with silicosis will be modified.

At this time a few words with reference to death from tuberculosis occurring in persons with silicosis would be in order. If death were

actually caused by tuberculosis, the fact must be acknowledged that the disease was active. That person should have had a positive sputum and the tuberculous disease must have been of the ulcerative rather than of the proliferative type. Tuberculosis cannot be said to have been the cause of death in persons with the fibrotic type of disease. There is more reason to assume that in cases of productive tuberculosis superimposed on an extensive silicosis death would eventually be due to failure of the right side of the heart secondary to structural changes in the lung. The mechanism would be similar to that produced in a far advanced uncomplicated silicosis with extensive pulmonary emphysema.

Auerbach³¹ reported the gross and microscopic changes in a series of twelve cases of silicotuberculosis at autopsy. Every one of these patients had a persistently positive sputum while alive. At postmortem examination the tuberculosis was found to be of the caseous pneumonic type in every instance. There were

tuberculous cavities present in the usual apical and subapical regions in most cases. In a few cases the cavities were in the midportion of the lung. The microscopic appearance of areas of caseation surrounding the silicotic nodules is described in great detail. In his paper Auerbach also included the postmortem changes in three cases of silicosis without tuberculosis.

Cases Admitted to Medical Services of Sea View Hospital from 1932 Through 1937

60 cases	Silicosis 26	Living 19	In hospital 2 Discharged 17	Diagnosis based on history and clinical and roentgen examinations
		Dead 7	2 had extrapulmonary tuberculous lesions and died of a generalized miliary tuberculosis	
	Silico-tuberculosis 40	Postmortem examination	5 had silicosis, emphysema, cardiac hypertrophy and dilatation 3 had nontuberculous excavations	Diagnosis based on history and clinical and roentgen examinations
		Living 15 Dead 25	In hospital 5 Discharged 7 No postmortem examination 7 Postmortem examination 18	

One of these was a man aged 72 who gave a history of thirty-five years of constant exposure to siliceous dust. During the patient's stay in the hospital his sputum was persistently negative for tubercle bacilli. Death was attributed to heart failure. At autopsy there was extensive silicosis with no evidences of tuberculosis. There were evidences of cardiac failure. The two remaining cases presented histories of prolonged exposure to dust. In one there was a markedly advanced anthracosilicosis and in the other an advanced stage of silicosis with a nontuberculous abscess of the lung. The sputum of both of these men had always been negative for tubercle bacilli. These observations do not agree with those of Riddell,³² who found that the lungs of many silicotic patients whose sputum was constantly negative during life showed extensive tuberculous involvement at autopsy.

From 1932 through 1937, sixty-five persons with silicosis and silicotuberculosis were admitted to the medical services of Sea View Hospital. The ages of these patients ranged from 26 to 72 years, with an average age of 47 years. There was a history of exposure to harmful dusts in every instance. The length of the occupational history varied from one to forty-seven years, with an average duration of 15.3 years. Among the industries represented were mining of hard coal, stonecutting, metal grinding and polishing, sand blasting, rock drilling, foundry work and excavating. A definite history of the use of a jack hammer or a compressed air drill was obtained in thirty-nine instances.

The exact interval from the time the patient left his dusty occupation until his admission to the hospital was obtained in forty instances. There were eight patients admitted within one year, seven from two to five years, eighteen from five to ten years and seven after ten years. Despite the adequate history of exposure to harmful

32. Riddell, A. R.: The Clinical Aspects of Simple Silicosis and Silicotuberculosis with Tuberculosis, *Am. Rev. Tuberc.* 29: 36-42 (Jan.) 1934.

31. Auerbach, O.: *Quart. Bull. Sea View Hosp.* 2: 3-27 (Oct.) 1936.



Fig. 7.—G. B., a Negro aged 47, had been a stone driller in mines, tunnels and subways for twenty-five years. The clinical diagnosis was silicotuberculosis. The sputum was positive for tubercle bacilli (Gaffky 3 to 5). Roentgen examination revealed diffuse linear and nodular fibrosis, bilateral caseous pneumonic tuberculosis, emphysema and silicotuberculosis. Postmortem examination showed silicotuberculosis, caseous-pneumonic tuberculosis and adhesive pleuritis.

dusts, the referred diagnosis for admission to Sea View Hospital was chronic pulmonary tuberculosis in forty-three of the sixty-five cases. Nineteen patients were admitted with the diagnosis of silicotuberculosis. In one case a diagnosis of asthma had been made before admission and in the remaining two cases no definite diagnosis had been recorded.

The fact must be borne in mind that all the admissions to Sea View Hospital come either from the medical or from the tuberculosis service of other hospitals or from the tuberculosis clinic of the department of health. It is therefore logical to assume that these patients had been examined by at least one man specializing in diseases of the chest. It is because of this clinical error in the hands of men trained in pulmonary diseases that we were prompted to analyze the cases admitted to Sea View Hospital and to present our observations.

A study of the forty-three cases admitted with the diagnosis of chronic pulmonary tuberculosis revealed that in nineteen repeated examination of the sputum and even repeated analyses of the gastric contents failed to show the presence of tubercle bacilli. Four of these patients died and came to autopsy. In three of these the postmortem examination revealed extensive silicosis with marked emphysema, hypertrophy and dilatation of the heart, especially the right side of the heart. One of these had nontuberculous excavations. The fourth case showed a terminal miliary tuberculosis of the lungs superimposed on an advanced silicosis. Death was due to a tuberculous meningitis. There was also extensive tuberculous disease of the prostate, seminal vesicles, epididymides and testes with no pulmonary tuberculous focus responsible for the miliary dissemination. Of the remaining fifteen patients with persistently negative sputums, thirteen were discharged after thorough clinical and roentgen studies, with the diagnosis of silicosis. Two patients are still in the hospital. The roentgen changes in this group of fifteen patients varied considerably. In two cases there were marked fibrotic changes of advanced silicosis. In one instance the films revealed a bilateral, symmetric fibrosis. The remainder of the cases showed a symmetric nodular dissemination most profuse in the middle fields of the lungs. In these instances, silicosis was immediately suspected.

Twenty-four of the forty-three patients admitted with the diagnosis of tuberculosis had a positive sputum. Of this group, sixteen have died and permission for autopsies were obtained in eleven instances. All these showed an extensive caseous-pneumonic type of tuberculosis together with widespread silicosis. There were multiple tuberculous excavations in the upper lobes. Roentgen examination of the remaining thirteen patients in this group showed a caseous pneumonic type of tuberculosis and a disseminated nodular infiltration which was interpreted as silicosis. Four of these patients are still in the hospital and four have left against advice.

There were nineteen patients in whom the diagnosis of silicotuberculosis had been made before admission to Sea View Hospital. Nine of these patients have died and in seven of this group a postmortem examination was obtained. On autopsy, advanced silicosis in addition to caseous pneumonic tuberculosis was found in five. In two, silicosis without tuberculosis was found. One of these had nontuberculous excavations. The other presented Pott's disease of the cervical spine and tuberculosis of the genito-urinary tract and died of a

generalized miliary dissemination. In three of the remaining ten patients, tubercle bacilli were never recovered from the sputums or gastric contents. Roentgen examination revealed a diffuse bilateral symmetric nodular fibrosis interpreted as uncomplicated silicosis. These three patients were discharged with a diagnosis of silicosis. The remaining seven patients in this group had positive sputums for tubercle bacilli. Three of these patients have left the hospital. Roentgen examinations were indicative of silicosis and caseous pneumonic tuberculosis. Four patients are still in the hospital. They have widespread bilateral caseous-pneumonic tuberculosis with many large coalescent fibrotic lesions.

Of the three remaining patients in the entire group, one was admitted with a diagnosis of asthma. Roentgen examination revealed moderately advanced caseous pneumonic tuberculosis with silicosis. This patient died and postmortem examination revealed extensive silicotuberculosis. In the other two cases, no diagnosis had been made prior to admission. In one case the sputum was positive for tubercle bacilli. A clinical diagnosis of silicotuberculosis was made. This was verified at autopsy. In the third case the sputum was continuously negative. The patient had been a miner of hard coal for ten years. He was discharged with a diagnosis of silicosis and is now working again.

In addition to our own group of sixty-five patients there was one with silicosis at the Richmond County Farm Colony, a white man aged 71, who had been a stonecutter for twenty years.

About six months before his death he began to complain of increasingly severe dyspnea, weakness, pain in the chest and cough. His sputum was negative for tubercle bacilli. Autopsy revealed extensive silicosis and nontuberculous excavations. There was marked emphysema with many blebs. There was also extensive cardiac hypertrophy and dilatation.

Atypical Cases (not included in the foregoing group).—There were three patients in whom the clinical and roentgen changes were strongly suggestive of silicotuberculosis. One of these, a white man aged 54, gave a history of working all his life as a paint chipper and caulker in shipyards. An analysis of the paint used for ships' bottoms showed a silicon dioxide content of 24.5 per cent. The patient had a positive sputum, and roentgen examination revealed an acinous and nodular infiltration throughout the upper two thirds of both lungs. There were irregular confluent areas present and there was a small excavation in the left subapical region. The impression was tuberculosis superimposed on silicosis. At autopsy an extensive pulmonary tuber-



Fig. 8.—L. H., a white man aged 33, a chauffeur, had no history of exposure to dust. The clinical diagnosis was pulmonary tuberculosis. The sputum was positive for tubercle bacilli (Gaffky 4 to 6). Roentgen examination revealed silicotuberculosis. Postmortem examination showed pulmonary tuberculosis with cavitations, acinous nodose tuberculosis of all lobes, caseous bronchitis and emphysema.

culosis with cavitation in both lungs and a diffuse caseous bronchopneumonia were found. There were marked emphysema and adhesive pleurisy. There were no gross or microscopic evidences of silicosis.

A white man aged 33, a chauffeur, gave a history of tuberculosis of seven years' duration. There was no history of dusty occupation. Sputum was positive for tubercle bacilli. Roentgen examination revealed diffuse acinous and nodular changes irregularly distributed throughout both lungs, superimposed on a caseous pneumonic lesion. The productive changes predominated. The impression from roentgen examination was silicotuberculosis. Autopsy disclosed pulmonary tuberculosis with bilateral cavitation and extensive acinous nodose tuberculosis of all lobes. Both lungs were emphysematous. Silicosis was not observed.

The third patient, a white man aged 54, had no history of exposure to dust. Sputum was positive for tubercle bacilli. The roentgen examination revealed a bilateral caseous pneumonic tuberculosis of the upper lobes with some changes suggestive of silicosis, and investigation for silicotuberculosis was recommended. Autopsy revealed pulmonary tuberculosis with cavitation in both lungs, acinous nodose tuberculosis, bronchiectases of both lower lobes and chronic adhesive pleurisy.

There was a fourth patient who presented some very interesting and atypical conditions. A white woman aged 52 was admitted to Sea View Hospital Sept. 15, 1935. A diagnosis of chronic pulmonary tuberculosis had been made in 1933, at which time her sputum had been positive for tubercle bacilli. Subsequent specimens of her sputum were continuously negative. Death occurred October 14. The patient's complaints were rapidly increasing dyspnea, marked loss of weight and nonproductive cough. The patient was a housewife, and no history of exposure to dust could be elicited. Roentgen examination showed extensive bilateral involvement with numerous dense fibrotic masses and excavations, with a large mass at the roof of the right lung. A mediastinal mass was present.

There was increasing dyspnea, with strangulation and death. Postmortem examination showed interlocking trabeculated cavities in both lungs. These cavities were surrounded by firm, flat, slate gray areas which on microscopic examination showed the typical whorled arrangement of the silicotic lesion. There was tremendous enlargement of the tracheobronchial and paratracheal nodes. These also contained firm, slate gray areas. The heart was hypertrophied and dilated.

SUMMARY

Sixty-five patients with silicosis and silicotuberculosis were under observation in Sea View Hospital. Forty-three were referred for admission with a diagnosis of pulmonary tuberculosis, nineteen with a diagnosis of silicotuberculosis and three with no recorded diagnosis. A study of this group revealed that twenty-six had silicosis and forty had silicotuberculosis.

All admissions to Sea View Hospital are potentially tuberculous. Nontuberculous patients are not referred for admission. A patient could not be referred, nor would he be admitted to the hospital, with a diagnosis of silicosis. With the exclusion of clinically diagnosed cases of silicosis the incidence of silicotuberculosis in our group is 60.6 per cent. From this it may be assumed that the incidence of tuberculosis and silicosis is considerably below 60 per cent in a nonselected group at large.

The diagnosis of silicosis or silicotuberculosis rarely presents difficulties. Three proved cases of silicosis presented pulmonary excavations. At no time was the tubercle bacillus recovered from the sputum or gastric contents. Because of the persistently negative sputums, even in the presence of pulmonary excavations on roentgen examination, a diagnosis of silicosis was made and pulmonary tuberculosis excluded.

The total number of deaths from silicosis and silicotuberculosis was thirty-two. Permission for post-mortem examinations was obtained in twenty-five. In seven of these patients silicosis was demonstrated, three of which presented nontuberculous excavations, with no tuberculosis. In this same group there were two cases of extrapulmonary tuberculosis in which death occurred from a generalized miliary lesion. During hospitalization these patients never had a positive sputum. The cases of tuberculosis all showed a caseous-pneumonic type of lesion, and during hospitalization a persistently positive sputum was present in all.

667 Madison Avenue.

SPONTANEOUS PNEUMOTHORAX COMPLICATING PNEUMOTHORAX THERAPY

WITH RECOVERY AFTER PNEUMONOLYSIS:
REPORT OF THREE CASES

J. W. CUTLER, M.D.

PHILADELPHIA

Spontaneous pneumothorax may complicate pneumothorax therapy for pulmonary tuberculosis at any time during the course of treatment. It is always a serious and may be a fatal complication. It invariably requires emergency treatment.

Although many writers recognize perforation of the lung at the base of an adhesion as one of the ways in which a spontaneous pneumothorax may develop during pneumothorax treatment, a survey of recent literature fails to disclose mention of pneumonolysis as a specific form of surgical intervention to cure this particular type of spontaneous pneumothorax. There is no reference to it in Alexander's book "The Collapse Therapy of Pulmonary Tuberculosis" or in Mason's writings.

Since November 1936, spontaneous pneumothorax has developed in three patients under my care following a therapeutic refill, which, as will be shown, was the result of a tear in the visceral pleura at the base of an adhesion, with the adhesion remaining attached to the lung and preventing self closure of the perforation. In two, the spontaneous pneumothorax occurred two and fourteen months respectively after pneumothorax therapy was instituted and successfully maintained. Both of these patients had a simultaneous bilateral artificial pneumothorax. In the third patient, with unilateral collapse, the spontaneous pneumothorax developed immediately after the first refill. The complication was serious in each instance and failed to respond to the usual therapeutic procedures, including continuous decompression. Closed intrapleural pneumonolysis was carried out to sever the pleural adhesions known to be present and was successful in permanently abolishing the spontaneous pneumothorax in each case.

From the Henry Phipps Institute and Graduate Hospital, University of Pennsylvania School of Medicine.

REPORT OF CASES

CASE 1.—Although chronologically this is the third case in this series, it is cited first since it portrays the mechanism of traumatic spontaneous pneumothorax more strikingly than the first two cases.

Mrs. M. K., white, aged 26, has been ill with clinical tuberculosis since September 1936. When I first saw her, in consultation Oct. 4, 1937, she had far advanced bilateral tuberculosis with extensive cavity formation in each lung. Pneumothorax was instituted

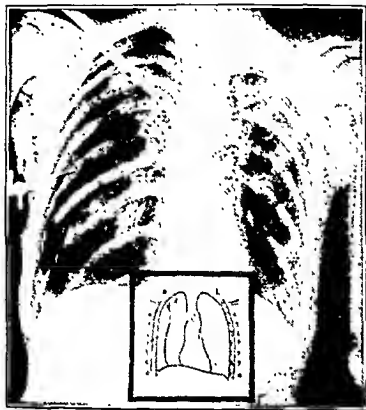


Fig. 1 (case 1).—Spontaneous pneumothorax on the right with the needle in the pleural cavity to permit continuous decompression. Many adhesions in the upper sixth portion of the pleural cavity. For the most part these adhesions were short bands of varying thickness. The tear in the right lung was at the base of the nearest band and followed the first therapeutic refill. Complete recovery occurred after severance of the offending adhesions and collapse therapy was continued.

on the right side on October 9 and 200 cc. of air was introduced under negative pressure. Except for the usual discomfort following the induction of pneumothorax, the treatment was entirely uneventful. A refill of 200 cc. of air was given two days later. The intrapleural pressure was negative before and after treatment. Within a few minutes after the withdrawal of the needle, the patient complained of shortness of breath. It seemed to increase in severity, and air was withdrawn. The patient, however, failed to obtain the relief expected, and it became apparent that a

spontaneous pneumothorax had developed. Continuous decompression with the aid of a suction pump was continued for three full days without lasting relief. In the meantime the patient became definitely weaker and the outlook appeared ominous. In the roentgenogram of October 15 (fig. 1) the extent of the pneumothorax did not appear excessive, but many adhesions were noted in the upper third of the right side of the chest. It was now believed that the spontaneous pneumothorax was the result of a tear in the lung near the base of one of the apical adhesions, occasioned by the sudden stretching of the adhesions following the refill. With the adhesions under tension and remaining attached to the surrounding lung, it was reasonable to assume that they kept the edges of the tear apart, permitting a constant stream of air to enter the pleural cavity with the inevitable result of a high tension pneumothorax. Severance of the offending adhesions to relieve the pull on the lung and permit self closure of the rent was therefore a logical procedure. A diagnostic thoracoscopy was made October 15. Many extensive adhesions, for the most part short, thick bands, were noted at the apex and in the region of the first and second anterior interspaces. While the forceps thoracoscope was being manipulated, one of the blades was temporarily placed on the lung, at the base of the nearest band, and the surrounding lung immediately inflated. When the forceps blade was removed, the surrounding lung quickly deflated. This procedure was repeated several times with the same sequence. It was clear that the tear in the lung was at the base of the band adhesion. It could not be visualized, however, on direct inspection. The band adhesion in question was severed, together with some minor string adhesions nearby. The surrounding lung immediately inflated and the patient obtained marked relief of her dyspnea. Continuous decompression was discontinued and the patient made an uneventful recovery. Pneumothorax on the right side has been continued with no ill effects.

CASE 2.—Mrs. J. B., white, aged 25, had been receiving pneumothorax treatment for advanced tuberculosis on the left side since 1930. Oct. 10, 1936, a simultaneous bilateral

pneumothorax was instituted for advancing disease and recent cavity formation in the right lung and a satisfactory collapse was established. The right-sided pneumothorax was complicated by at least two apical adhesions located almost entirely above the circle of the first rib, which in the roentgenogram appeared to be cords of medium size. November 7 the patient received the usual refill on the right side and did not complain of anything unusual. The intrapleural pressure was negative before and after the refill, as it had been throughout the entire course of treatment. That evening, however, she became short of breath and decompression became necessary. Finally a needle was left in place in the right pleural cavity for twelve hours. This proved sufficient to correct the spontaneous pneumothorax and the patient continued with her weekly therapeutic refills until December 1. On that day, immediately after a refill, a spontaneous pneumothorax again developed on the right side. The spontaneous pneumothorax failed to stabilize itself after simple decompression and the patient was admitted to the Graduate Hospital and continuous decompression was established. The roentgenogram made on admission (fig. 2) revealed the cord adhesions previously noted extending from the apex of the lung to the apical pleura. In addition there was increased collapse of the right lung, the result of the spontaneous pneumothorax. There was no pleural fluid, nor were there symptoms of toxemia to indicate ulceration of the lung and emptying of tubercle bacilli and pyogenic organisms into the right pleural cavity, as happens so commonly in spontaneous pneumothorax complicating pneumothorax therapy. The only symptom was marked and increasing dyspnea.

The repeated spontaneous pneumothorax in this case could be explained on the supposition that one of the adhesions had produced a small tear in the lung near its point of attachment on the visceral pleura. When one considers the rapid change in intrapleural pressure, the sudden increase in collapse of the lung and the marked increase in tension on pleural adhesions that follows the average pneumothorax refill, there is much cause for wonder that more adhesions do not give way in the course of treatment.

It is reasonable to suppose that at first the tear was slight and sealed itself automatically when the intrapleural pressure was reduced and the tension on the collapsed lung and adhesion was lessened by the decompression. In time, however, the rent apparently became larger and the spontaneous pneumothorax more severe, and the suspended adhesions, put greatly on stretch, kept the edges of the tear in the lung apart so that the patient could no longer obtain relief. If this sequence of events was correct, it should follow that if the offending adhesions were severed the natural elasticity of the lung would close the fistula. Closed intrapleural pneumonolysis was therefore the only logical solution to the problem if therapeutic pneumothorax was to be maintained. The operation was performed December 2, and one moderately thick apical band adhesion and one small apical eord adhesion were severed. Immediate relief of the dyspnea occurred. Continuous decompression was discontinued soon after the operation and simultaneous bilateral pneumothorax maintained. There has been no recurrence of symptoms



Fig. 2 (case 2).—Spontaneous pneumothorax on the right following a pneumothorax refill two months after the collapse had been successfully maintained. There was marked collapse of the right lung even after removal of large quantities of air. Apical cord adhesions can be seen in right pleural cavity. The tear in the lung was believed to be near the base of the larger cord adhesion. Complete recovery followed pneumonolysis. Bilateral pneumothorax has been maintained without difficulty.

of spontaneous pneumothorax, although the refills are of average quantity and are given at regular weekly intervals. Although a careful search of the pleural surface for the exact location of the tear was unsuccessful, the clinical result following the operation left little room for doubt that the adhesions were the responsible factor.

CASE 3.—J. W., a white man, aged 28, had been having right-sided pneumothorax since May 1933 and simultaneous left-sided pneumothorax since June 10, 1936. The pneumothorax on the left was complicated by a conical cord adhesion, which had its parietal attachment in the second anterolateral inter-

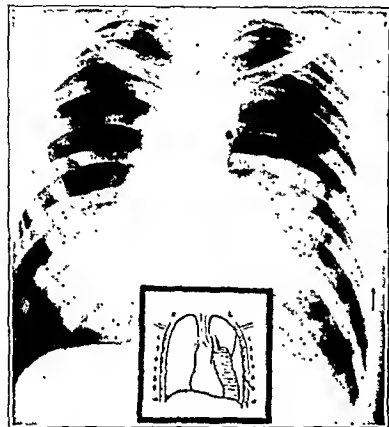


Fig. 3 (case 3).—Spontaneous pneumothorax on the left following a therapeutic pneumothorax refill fourteen months after pneumothorax had been established and maintained. Note the needle in the left pleural cavity, indicated by arrow, to permit continuous decompression. There were two apical adhesions and one lateral thick cord adhesion. The tear in the lung was believed to be near the base of the lateral cord adhesion. Complete recovery followed the severance of the adhesions. Bilateral pneumothorax has been maintained with no ill effects.

space, and two apical string adhesions. Since the collapse was adequate and all cavities were closed, no attempt was made at first to sever these adhesions.

Oct. 6, 1936, four months after pneumothorax on the left was instituted, the patient became short of breath following the usual refill on the left, and air had to be withdrawn from the pleural cavity. The patient obtained relief and no unusual attention was paid to this occurrence. Fluoroscopically a marked collapse of the left lung could be observed, which was of greater degree than could be explained on the basis of the amount of air introduced. Aug. 2, 1937, fourteen months

after treatment was instituted on the left and ten months after the experience just described, the patient was given his usual left-sided weekly refill in the office and dressed and went home. Within an hour he had to return because of marked and increasing dyspnea. One thousand cc. of air was removed before the patient obtained relief. Fluoroscopic examination after the decompression revealed a well expanded left lung. Within fifteen minutes the patient was again dyspneic and another thousand cubic centimeters of air was withdrawn, but relief was temporary. A diagnosis of a valvular spontaneous pneumothorax was made and the patient was hospitalized and continuous decompression was instituted (fig. 3).

From a study of the roentgenograms and history and with the experience of the preceding case in mind, it seemed reasonable to believe that the spontaneous pneumothorax was traumatic in nature, in all probability the result of a tear in the lung near the base of one of the adhesions (lateral), brought about by repeated trauma at this point from the recurrent sudden increase in tension at each pneumothorax refill, the collapsed lung and the attached adhesion pulling in opposite directions, with the tear prevented from closing spontaneously by the attached adhesions. If this hypothesis was correct, surgical severance of these adhesions was indicated.

On August 3, under local anesthesia, three adhesions were severed; namely, two apical strings and one thick lateral cord. Immediately following the operation, breathing became noticeably easier and continuous decompression was discontinued. Recovery was uneventful and the patient soon returned to work. He has continued with the simultaneous bilateral pneumothorax without untoward symptoms, although the amount of air given on the left side varies between 500 and 700 cc.

Although a vigilant search was made with the thoracoscope at the time of operation to locate the tear in the lung, the effort was unproductive. The result following the operation left little room for doubt, however, of the nature of the mechanism involved.

SUMMARY

Tear of the lung at the base of an adhesion, with resultant spontaneous pneumothorax, may complicate pneumothorax therapy for pulmonary tuberculosis at any time during the course of treatment and occurs more frequently than is commonly supposed. It usually follows a pneumothorax refill at a time when adhesions are put on stretch rather suddenly. The danger is greatest in the early stages of an induced pneumothorax and in those cases in which the lung undergoes considerable reexpansion between refills and requires the introduction of a sufficiently large quantity of air at each filling to maintain the lung in satisfactory collapse. In mild cases the tear may become temporarily sealed and give little or no warning of impending catastrophe, for the spontaneous pneumothorax may recur at any subsequent refill and may become sufficiently alarming to require exceptional emergency measures.

When the adhesions remain attached to the lung and prevent self closure of the tear, surgical severance of the adhesions responsible (pneumonolysis) is a specific procedure to abolish the complication. Three cases are reported in which the operation resulted in immediate recovery after a serious spontaneous pneumothorax developed following a therapeutic refill.

2109 Spruce Street.

Clinical Notes, Suggestions and New Instruments

CONCENTRATION METHOD APPLICABLE TO THE NEUFELD QUELLUNG REACTION IN SPUTUMS

GEORGE V. TAPLIN, M.D.; GEORGE R. MENEELY, M.D., AND ROBERT A. HETTING, M.D., ROCHESTER, N. Y.

In the routine use of the quellung (swelling) reaction for the rapid typing of pneumococci in sputum, certain difficulties are encountered frequently which delay the process of typing and



Type I quellung reaction by concentration method.

impair its accuracy. These may be enumerated as follows: 1. In some specimens of sputum pneumococci are rare so that considerable time is consumed in making sure that no quellung occurs. 2. The presence of cells and detritus frequently makes it difficult to recognize pneumococci and delays the process of quellung for from ten to thirty minutes. 3. The individual portions of sputum used with each type-specific serum vary greatly

From the Department of Medicine, University of Rochester School of Medicine and Dentistry, and clinics of the Strong Memorial and Rochester municipal hospitals.

among themselves with regard to factors 1 and 2. In view of the large number of types to be determined and the fact that more than one type of pneumococcus may be present in a given specimen, considerable time may be required before a complete report can be rendered. For this reason the following procedure has been employed by the medical service of the Strong Memorial Hospital and the Rochester Municipal Hospital in an effort to reduce the time and to improve the accuracy of the typing of sputums in cases of pneumonia:

METHOD

1. The entire specimen of sputum is emulsified by drawing it up in a small (2 cc.) syringe and mixing it thoroughly in a sterile Petri dish until all large particles are broken up.

2. In a sterile centrifuge tube is placed 0.5 cc. of the emulsion, and from 6 to 10 cc. of physiologic solution of sodium chloride

As a result of this procedure the quellung reaction takes place quickly, in some cases immediately. Detection of capsular swelling is rendered much easier by the lack of cells and detritus and by the larger number of organisms in the field (from 10 to 300 per oil immersion field). No injury to the capsule has been observed as a result of the dilution with physiologic solution of sodium chloride and centrifugation. No false positive reactions have been observed. The suspension and washing of sputum in saline solution probably removes the soluble substance that causes agglutination and failure of the quellung reaction in other highly concentrated specimens. With our technic highly concentrated suspensions may agglutinate but have never failed to swell.

This procedure has been used in a series of forty-three sputums, in which typing was carried out by the conventional technic for quellung reactions as well as by the concentration

Comparison of Typing Reactions by Three Methods Applied to Forty-Three Consecutive Sputums

Number	Clinical Diagnosis	Quellung—Conventional Method		Quellung—Concentration Method		Confirmatory Tests
		Result	Organisms per Oil Immersion Field	Result	Organisms per Oil Immersion Field	
1	Lobar pneumonia.....	Type 8	1-2 in 25 minutes	Type 8	50-100 in 5 minutes	Type 8—mouse
2	Lobar pneumonia.....	Type 1	4-5 in 10 minutes	Type 1	50-200 in 5 minutes	Type 1—mouse
3	Lobar pneumonia.....	Type 2	1-2 in 30 minutes	Type 2	50-100 in 3 minutes	Type 2—mouse
4	Lobar pneumonia.....	Negative	5-10 in 20 minutes	Negative	15-50 in 5 minutes	Type 10—mouse
5	Lobar pneumonia.....	Negative	20-30 in 20 minutes	Negative	60-80 in 5 minutes	Type 3—mouse
6	Lobar pneumonia.....	Type 3	0-5 in 30 minutes	Type 3	5-20 in 1 minute	Type 3—mouse
7	Lobar pneumonia.....	Negative	50-100—debris	Negative	50-100—debris	No type isolated
8	Lobar pneumonia.....	Negative	0-20 in 20 minutes	Negative	20-50 in 5 minutes	Type 17
9	Lobar pneumonia.....	Negative	0-5 in 20 minutes	Negative	30-50 in 5 minutes	No type isolated
10	Lobar pneumonia.....	Type 3	0-5 in 20 minutes	Type 3	10-30 in 5 minutes	Type 3—mouse
11	Lobar pneumonia.....	Negative	0-20 in 20 minutes	Type 1	50-100 in 10 minutes	Type 1—mouse
12	Lobar pneumonia.....	Negative	0-5 in 25 minutes	Negative	8-30 in 10 minutes	No type isolated
13	Lobar pneumonia.....	Type 4	3-20 in 15 minutes	Type 4	3-20 immediate	Type 4—mouse
14	Lobar pneumonia.....	Type 7	3-10 in 15 minutes	Type 7	0-20 immediate	Type 4—mouse
15	Lobar pneumonia.....	Type 4	1-5 in 10 minutes	Type 4	5-20 immediate	Type 4—mouse
16	Lobar pneumonia.....	Type 3	3-10 in 35 minutes	Type 3	3-10 immediate	Type 3—mouse
17	Lobar pneumonia.....	Type 2	0-2 in 30 minutes	Type 2 & 7	20-100 immediate	Type 2 & 7—mouse
18	Lobar pneumonia.....	Negative	0-25 in 30 minutes	Negative	50-200 in 20 minutes	Could not be typed
19	Lobar pneumonia.....	Negative	0-2 in 30 minutes	Type 6	50-100 in 5 minutes	Type 6—mouse
20	Lobar pneumonia.....	Negative	Rare	Negative	0-10	Type 30—mouse
21	Lobar pneumonia.....	Negative	Few	Negative	8-20	No type isolated
22	Lobar pneumonia.....	Negative	Few	Negative	50-100	Type 3—mouse
23	Lobar pneumonia.....	Negative	Few	Negative	8-20	Strep. viridans—mouse
24	Lobar pneumonia.....	Negative	Few	Negative	20-50	Not enough for mouse
25	?Pneumonia.....	Negative	10-15 in 15 minutes	Negative	20-50 in 5 minutes	Strep. viridans
26	Lobar pneumonia.....	Type 5	5-10 in 30 minutes	Type 5	50-200 immediate	Type 5—mouse
27	Lobar pneumonia.....	Type 7	0-5 in 30 minutes	Type 7	10-100 in 10 minutes	Type 7—mouse
28	Lobar pneumonia.....	Negative	0-5 in 15 minutes	Negative	50-200 in 5 minutes	Type 20—mouse
29	Lobar pneumonia.....	Type 4	0-5 in 10 minutes	Type 4	5-10 in 10 minutes	Type 4—mouse
30	?Pneumonia.....	Negative	Rare in 30 minutes	Negative	Few in 10 minutes	No type isolated
31	Lobar pneumonia.....	Negative	5-10 in 10 minutes	Negative	10-50 in 20 minutes	Type 3—mouse
32	Lobar pneumonia.....	Negative	Few in 10 minutes	Negative	20-50 in 20 minutes	Type 31—mouse
33	.....	Negative	Few in 15 minutes	Negative	10-20 in 10 minutes	Type 12—mouse
34	.....	Negative	Few in 20 minutes	Negative	25-50 in 10 minutes	Does not subtype
35	.....	Negative	Few in 20 minutes	Negative	25-50 in 10 minutes	Does not subtype
36	Lobar pneumonia.....	Negative	Few	Negative	20-30	Hemolytic streptococcus
37	Lobar pneumonia.....	Type 7	Rare in 30 minutes	Type 7	2-5 in 5 minutes	Type 7—mouse
38	Lobar pneumonia.....	Negative	Few	Negative	2-10 in 5 minutes	Type 16—mouse
39	Lobar pneumonia.....	Negative	1-5 in 20 minutes	Type 2	0-10 in 20 minutes	Type 2—mouse
40	Lobar pneumonia.....	Type 2	0-3 in 30 minutes	Type 2	10-30 in 5 minutes	Type 2—mouse
41	Lobar pneumonia.....	Negative	2-5 in 30 minutes	Type 6	50-200 immediate	Type 6—mouse
42	Lobar pneumonia.....	Negative	Rare in 30 minutes	Negative	5-10 in 5 minutes	Type 3—mouse
43	Lobar pneumonia.....	Type 8	0-5 in 30 minutes	Type 8	10-50 in 5 minutes	Type 8—mouse

is added, depending on the viscosity of the sputum. This mixture is emulsified by drawing the diluted specimen back and forth in a sterile 10 cc. pipet.

3. The emulsified specimen is put in the centrifuge at 1,000 revolutions per minute for two or three minutes to remove cells and detritus, the bacteria remaining in the supernatant fluid.

4. The supernatant fluid is transferred to another tube, which is put in the centrifuge at 3,000 revolutions per minute for ten minutes, after which the clear fluid is poured off, leaving about 0.25 cc. above the sediment.

5. The bacterial sediment is resuspended in the small remnant of supernatant fluid by shaking, and the resulting suspension is used for the typing tests. Before the suspension is mixed with specific typing serums, two drops of methylene blue are added and mixed with this suspension, the organisms being allowed to stain before the quellung reaction takes place. This has been used because in many cases when the serums and stains are added simultaneously the organisms swell before they stain and may be difficult to recognize.

method already described. In each case typing by mouse inoculation was carried out as an additional control by the laboratories of the Rochester Health Bureau. The comparison of results of the three procedures is given in the accompanying table.

SUMMARY

A simple method has been developed for preparing and concentrating sputums for the Neufeld quellung reaction in typing of pneumococcus sputums. We feel that the method increases the accuracy of the routine procedure and saves time in searching for the correct type. In this report, sputums were set up against pools 1 and 2 quellung serums, pool 1 containing types I, II, III, V and VIII and pool 2 types IV, VI, VII and IX. Specimens were called negative if no quellung occurred in either pool. Recently, the Department of Health of the State of New York has provided us with quellung serum for all thirty-two types with six pools. The method described appears to be even more useful under these circumstances, mainly because of assurance of a uniform, properly stained specimen with decreased cells and debris and increased organisms present.

HYPERTROPHY OF THE BREAST DUE TO INJECTIONS OF ADRENAL CORTEX EXTRACT IN A MAN WITH ADDISON'S DISEASE

R. A. EDWARDS, M.D.; M. B. SHIMKIN, M.D., AND
J. S. SHAVER, M.D., GALVESTON, TEXAS

This case is presented because an extensive review of the literature failed to reveal a similar effect of adrenal cortex extract in a man with Addison's disease and because of the interesting theoretical considerations involved.



Fig. 1.—Appearance of patient Dec. 4, 1935.

L. J. H., a white man, aged 35, a carpenter and laborer, admitted to John Sealy Hospital Sept. 7, 1935, had had attacks of nausea and vomiting during the preceding six years, lasting one or two days and occurring three or four times a year. These episodes were not severe, but once he was told by a physician that the blood pressure was "rather low." Three months before admission to the hospital he noted that his skin was becoming dark and that he had lost 8 pounds (3.6 Kg.). Two months previously he began to have asthenia and nausea, especially in the morning, progressing gradually to anorexia, diarrhea, extreme weakness and languor. There had been no loss of libido or potentia.

The family history was negative for tuberculosis, gynecomastia and endocrine dyscrasias. He was the father of three children, aged 8, 5 and 2 years. In 1926 he had been in the hospital with the diagnosis of influenza; at that time he was slightly underweight, his complexion was a light blond and the blood pressure was 122 systolic, 64 diastolic.

The patient on admission was thin and appeared weak. He was 69 inches (175 cm.) tall and weighed 129 pounds (58.5 Kg.). The skin was a dark brown, the pigmentation being more marked over the exposed portions of the body, on the genitalia and at the creases, and lighter over the palms of the hands. There were some dark spots over the dorsal surfaces of the hands and arms. The lips were darker than normal, but the buccal mucous membranes were not involved. The pubic hair was of feminine distribution. The blood pressure was 102 systolic, 66 diastolic, and the heart sounds were weak. The rest of the examination was negative.

Examinations of the urine, blood and feces, the Wassermann reaction and roentgenograms of the chest were all negative. The electrocardiogram showed low voltage in all leads but no other abnormalities. The basal metabolic rate was minus 14 per cent; after ingestion of 200 Gm. of ground beef it was minus 12 per cent. The dextrose tolerance test revealed a fasting blood sugar of 74 mg. per hundred cubic centimeters, with a rise to 125 mg. in an hour and a half and a drop to 98 mg. in three hours. Free acid was absent in the fasting gastric specimen but rose to 11 degrees with histamine. The blood chlorides were determined at 515 mg. per hundred cubic centimeters.

The impression was that the patient had Addison's disease. He was placed on 10 Gm. of sodium chloride a day and was discharged improved September 23.

He continued to work but was readmitted November 8 because of increased pigmentation of the skin, nausea and severe weakness of ten days' duration. The blood pressure was 76 systolic, 56 diastolic. The dextrose tolerance curve showed no rise from the initial level of 100 mg. per hundred cubic centimeters. The blood chlorides were 443 mg. and the non-protein nitrogen was 43 mg. per hundred cubic centimeters.

Vomiting, diarrhea and extreme lassitude developed, and the patient became irrational November 22. The temperature rose to 103 F., accompanied by a rapid and weak pulse, and remained at about that level for the next six days. The white blood cell count was 13,500 with 59 per cent polymorphonuclear neutrophils, and the sedimentation rate was 25 mm. in sixty minutes. The spinal fluid had 34 cells per cubic millimeter (94 per cent polymorphonuclears, 6 per cent lymphocytes) but was normal otherwise, including protein, colloidal gold reaction, Wassermann reaction, and special stains and cultures for organisms. The blood chlorides were 505 mg. per hundred

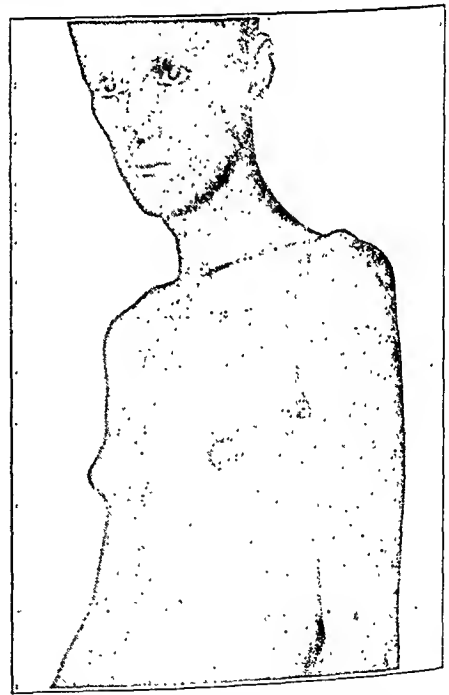


Fig. 2.—Appearance of patient May 31, 1937.

cubic centimeters. He was treated with intravenous dextrose and subcutaneous salt solutions, and by rectal drip of sodium bicarbonate and epinephrine. Ten cubic centimeters of adrenal cortex extract (eschatin) was administered intramuscularly the first day, and from 2 to 5 cc. daily thereafter. The intake of sodium chloride was maintained at 12 Gm.

The pigmentation of the skin and the asthenia decreased; he improved rapidly and was discharged from the hospital Dec. 20, 1935 (fig. 1).

Adrenal cortex extract in 1 cc. injections was continued daily for three months and then every other day for a similar period.

About a month after leaving the hospital he became aware of slight tenderness in the nipples, which became large and dark. There was a gradual increase in the size of the breasts, so that four months later they protruded almost an inch from the chest wall. The breasts were equal in size, smooth and soft in consistency, and tender to even light pressure. There were no nodularities or secretion.

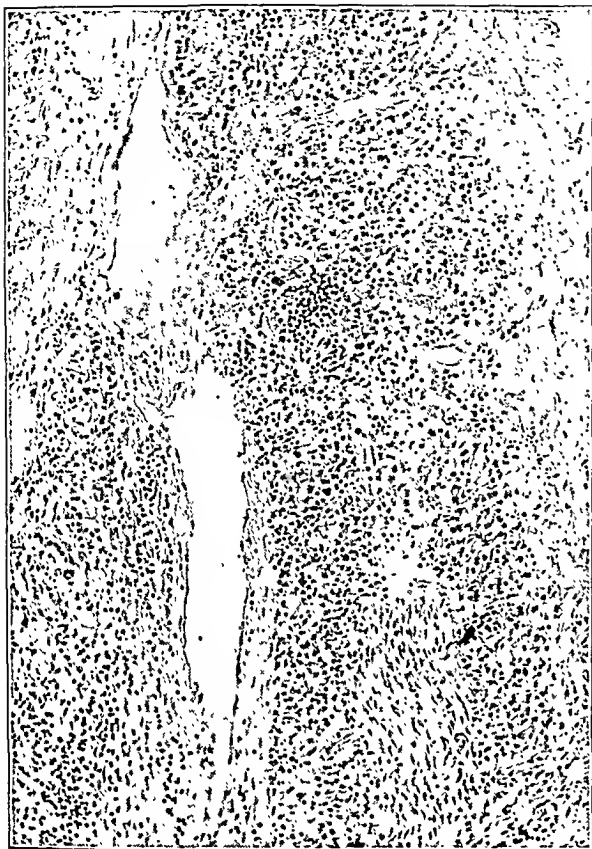


Fig. 3.—Section of adrenal gland, showing almost complete atrophy of the cortex.

Adrenal cortex extract was discontinued in July 1936. The breasts gradually became smaller and less tender, so that when he returned to the hospital November 2 with a recrudescence of his original symptoms they were almost flat with the chest wall. The adrenal cortex extract was resumed, and he was placed on a diet in which the potassium intake was less than 1.6 Gm. and the sodium (as the chloride and citrate) 21 Gm. daily. At this time the blood potassium was 19 mg. per hundred cubic centimeters and the sodium 223 mg. The dextrose tolerance curve was flat and the basal metabolic rate minus 10 per cent. No calcification in the kidney regions or abnormalities of the sella turcica were found roentgenographically. He was discharged greatly improved November 20.

The hypertrophy of the breasts recurred and remained stationary a month after the resumption of the adrenal cortex extract (fig. 2). He maintained himself on 1 cc. of adrenal cortex extract every other day and on the sodium salts, but the low potassium diet was not followed. He noted that the tenderness of the breast decreased with temporary lapses in the treatment and recurred when the injections of extract were resumed.

There were short periods of admission to the hospital in February, May, June and July 1937 because of transitory periods of weakness. December 4 he reentered with severe weakness, uncontrollable liquid diarrhea, extreme pigmentation and delirium. His wife admitted that during the preceding three months adrenal cortex extract had been taken but seldom; the breasts, however, had not diminished in size. The temperature was 104 F., the blood pressure 86 systolic, 34 diastolic, and the pulse almost imperceptible. Massive infusions of dextrose,

intravenous sodium chloride, subcutaneous saline solution and adrenal cortex extract (5 cc. intramuscularly and then repeated doses of 10 cc. intravenously) produced marked improvement within twelve hours. The temperature, however, remained about 103 F., and a day later he started to hiccup, became delirious and died from circulatory failure December 6.

At necropsy the significant pathologic changes were limited to the chest and the endocrine organs. There was no evidence of tuberculosis or of neoplasm in the body.

The lungs were edematous and contained patchy areas of bronchopneumonia. The heart weighed 220 Gm., and the myocardium was soft, flabby and dark brown. The brown

Size and Weight of Organs at Necropsy

Organ	Size. Cm.	Weight, Gm.
Right adrenal.....	2.6 by 1 by 0.2	0.4
Left adrenal.....	2.6 by 1 by 0.2	0.4
Right breast.....	7 by 5.5 by 3	54.0
Left breast.....	7 by 6.5 by 3	60.0
Pituitary.....	1 by 1.1 by 0.6	0.6
Right testis.....	3.5 by 2.5 by 2	10.5
Left testis.....	4 by 2 by 2	11.0
Thyroid.....	4 by 4.5 by 1.5	9.5
Thymus.....	6.5 by 3.5 by 1.5	16.0

atrophy of the heart was evident microscopically; the muscle cells were smaller than normal, and at the poles of the nuclei were many granules of yellowish brown pigment. There were some small areas of myocardial necrosis.

The adrenal glands were atrophied markedly, weighing less than one tenth of the normal. The zona glomerulosa and the



Fig. 4.—Section of the breast, showing simple hyperplasia.

zona fasciculata were absent completely. A few cells of the zona reticularis—large, with dark nuclei and pale-staining cytoplasm—were present but indistinct in outline. The medulla proper was very thin and was composed chiefly of small round cells with deeply staining nuclei and little cytoplasm (fig. 3).

Sections of the breasts showed a marked increase in the stroma of the connective tissue, with a slight increase in the number of round alveolar ducts lined with low columnar epithelium. No inflammatory reaction was present (fig. 4).

TYPHOID IN LARGE AMERICAN CITIES

JOUR. A. M. A.
JULY 20, 1937

The pituitary gland was of normal size. The outstanding feature was the predominance of the chromophobe cells of the anterior lobe; the proportion of the three types of cells was 92 per cent chromophobe, 8 per cent eosinophil and 2 per

The prostate gland and the testes were normal. All stages of spermatogenesis, from spermatogonia to fully developed spermatozoa, were visible in the walls of the tubules.

The thyroid was small, weighing about half of the value usually considered as normal; the microscopic appearance, however, showed no deviation from normal. The thymus was present and had normal adult microscopic features. No abnormalities were seen in the pancreatic tissue.

SUMMARY

In a man, aged 37, with Addison's disease of eight years' duration, gynecomastia developed after injections of adrenal cortex extract. The gynecomastia subsided with omission of the extract and recurred when it was resumed. Necropsy showed brown atrophy of the heart, primary atrophy of the adrenal cortical glands, simple hyperplasia of the breasts and a marked preponderance of the chromophobe cells of the anterior lobe of the pituitary gland.

Special Articles

TYPHOID IN THE LARGE CITIES OF THE UNITED STATES IN 1937

TWENTY-SIXTH ANNUAL REPORT

As in the preceding annual reviews, data have been obtained from the same ninety-three cities for which the annual statistical tabulations have been made. A communication addressed to the health officer of each city requested not only the total number of deaths from typhoid during the year 1937 but also a statement as to how many of these were among nonresidents. Furthermore, a comment was invited on any special outbreak of typhoid or any unusual protective measures taken to guard against this disease.

It is becoming increasingly difficult to secure an estimate of population for these cities. The willingness of the health officer to provide such estimate and personal determination of population trends vary throughout the country. The United States Census Bureau not being prepared to furnish estimates of population, we have been compelled to fall back on the judgment of the local health officer. Some of these officers make no credit for population increase since the 1930 census. Others would seem to have an exaggerated notion of population increase. One health officer records an increase of 15 per cent in population in but a single year and this in one of the conservative and rather stable communities near the Eastern seaboard. In spite of all these variations in judgment and the inevitable mistakes which have been made in estimating the population figures, we feel that the rates should be recorded, with, however, the proviso that they must be reviewed and corrected in light of the 1940 census. In the few instances in no instance will be significant. In the few furnish an estimate for 1937, either the 1930 census figures or the population data submitted for 1936 were used in determining the rates.

Paratyphoid has been excluded. In tables 1 to 8 inclusive (as well as in table 10) a special note has

The preceding articles in this series were published in THE JOURNAL May 31, 1913, p. 1702; May 9, 1914, p. 1473; April 17, 1915, p. 1333; April 22, 1916, p. 1305; March 17, 1917, p. 845; March 16, 1918, p. 1333; April 5, 1919, p. 997; March 6, 1920, p. 672; March 26, 1921, p. 1333; March 25, 1922, p. 890; March 10, 1923, p. 948; April 9, 1924, p. 1333; March 14, 1925, p. 813; March 27, 1926, p. 674; May 17, 1927, p. 1333; March 19, 1928, p. 1624; May 18, 1929, p. 1674; May 13, 1930, p. 1333; May 9, 1931, p. 1576; April 30, 1932, p. 1550; May 6, 1936, p. 1333; May 19, 1934, p. 1677; June 8, 1935, p. 2093; June 6, 1936, p. 1333; June 19, 1937, p. 2118.

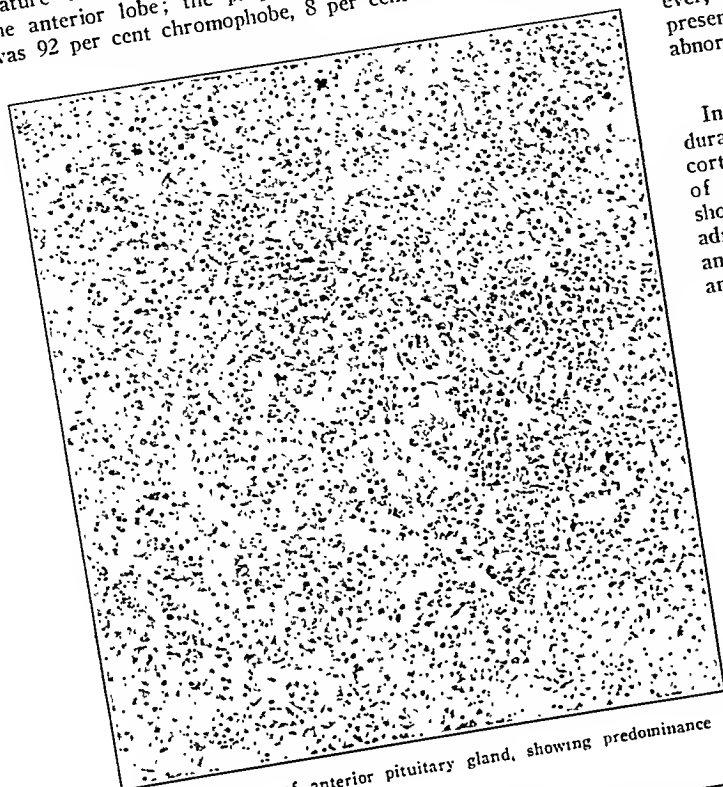


Fig. 5.—Section of anterior pituitary gland, showing predominance of chromophobe cells.

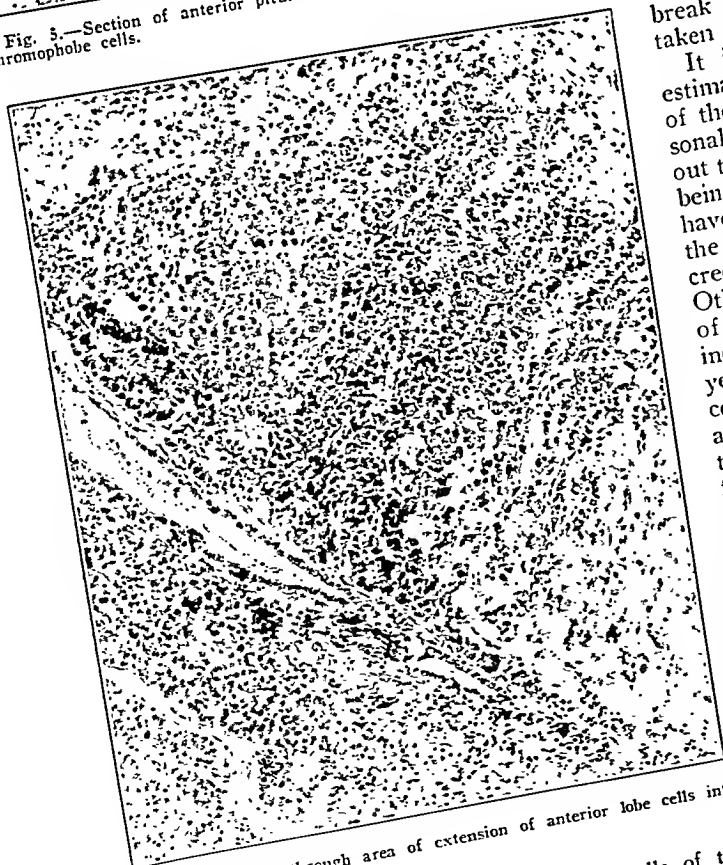


Fig. 6.—Section through area of extension of anterior lobe cells into the posterior lobe tissue.

cent basophil (fig. 5). In several regions the cells of the anterior lobe extended into the intermediate and the posterior

been made of cities in which all deaths occur among nonresidents. Similar notation has been added for the death rates for 1936 but in no instance for preceding years. Another symbol has been used to indicate those cities in which more than one third of the reported deaths were stated to have been among nonresidents. We have already mentioned the errors which will creep into the figures as a result of inaccurate census data. More important, we believe, are the variations in considering the classification of deaths among nonresidents and local practice with respect to case hospitalization. As an example, New York reports but one nonresident death in a total of twenty-five. The absence of nonresident deaths from any cause in New York means that no individual whose usual residence is outside New York died anywhere within the city limits from that particular cause. Deaths of nonresidents are not allocated to other jurisdictions. In Chicago, on the other hand, the figures presented would not include nonresidents who die in Chicago but whose usual abode is within the state of Illinois. Such cases would be allocated to their usual place of residence within the state. No correction is made for nonresidents who do not live in Illinois. It is reported that in 1937 no allocations of deaths from typhoid were made. On the

TABLE 1.—*Death Rates of Fourteen Cities in New England States from Typhoid per Hundred Thousand of Population*

	1937	1936	1935	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1905-1910
Bridgeport.....	0.0	0.0	0.0	0.3	0.5	2.2	4.8	5.0	10.3
Somerville.....	0.0	0.0	0.0	0.4	1.3	1.6	2.8	7.9	12.1
Watbury.....	0.0	0.0	2.0	0.4	1.2	1.0	5.0	18.8	....
Fall River.....	0.0	0.9	0.9	0.2*	2.2	2.3	8.5	13.4	13.5
Lynn.....	0.0	1.0	1.0	0.2	1.5	1.6	3.9	7.2	14.1
New Bedford.....	0.0	1.8	0.0	1.1*	1.5	1.7	6.0	15.0	16.1
Providence.....	0.4	0.8	0.8	1.1	1.3	1.8	3.8	8.7	21.5
Boston.....	0.4*	0.1*	0.5	0.6	1.2	2.2	2.5	9.0	16.0
Worcester.....	0.5*	0.0	0.5	0.6	1.0	2.3	3.5	5.0	11.8
Springfield.....	0.7*	0.0	0.0	1.0	0.4	2.0	4.4	17.6	19.9
Cambridge.....	0.8	0.0	0.0	0.9	2.1	4.3	2.5	4.0	9.8
Lowell.....	1.0	1.0	1.0	1.0*	2.6	2.4	5.2	10.2	13.9
Hartford.....	1.1	0.5	0.6	1.2	1.3	2.5	6.0	15.0	19.0
New Haven.....	1.2	1.2	0.0	0.7	0.6	4.4	6.8	18.2	30.8

* All typhoid deaths were stated to be in nonresidents.

† Rate computed from population as of April 1, 1930, as no estimate for July 1, 1933, was made by the Census Bureau.

other hand the regulations with regard to hospitalization of typhoid cases in Chicago are very rigid and would tend to exclude cases from neighboring communities. In some other cities, as for example Detroit, local regulations encourage the admission of communicable diseases to city hospitals. In this particular city a lease of land on which the communicable disease hospital is located makes it mandatory that all county communicable diseases be hospitalized on such premises and this naturally adds to the nonresident load. In Portland, Oregon, the city isolation hospital is located outside the city limits in Multnomah County, and deaths from communicable diseases do not ordinarily appear in the city's vital statistics. There seem to be innumerable minor variations in local practice which but add to the statistical confusion. It is hoped that some day a common denominator can be established on which to base a uniform practice for statistical summaries. Such errors of course will occur more frequently in the figures for diphtheria than for typhoid, as the latter disease is more often cared for in a general hospital.

It is apparent that there is great variation in significance attached to the extent of a local outbreak. Jacksonville reports no unusual prevalence of typhoid with a death rate of 4.0, while other cities are concerned with a death rate which does not exceed 1.0. Many of the

Southern cities serve as hospital centers for surrounding rural areas in which full time local health service has not been effectively established. The local hospitalization plans as well as the inadequacy of preventive care for Negroes presents a significant reason for the continuation of a relatively high typhoid mortality in some of the Southern cities.

TABLE 2.—*Death Rates of Eighteen Cities in Middle Atlantic States from Typhoid per Hundred Thousand of Population*

	1937	1936	1935	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1905-1910
Syracuse.....	0.0	0.0	0.5	0.8	0.8	2.3	7.7	12.3	15.6
Utica.....	0.0	0.0	1.0	0.6	1.1	3.9#	....	....	....
Yonkers.....	0.0	0.7†	1.4	0.7	0.5	1.7	4.8	5.0	10.3
Newark.....	0.0	0.2	0.0	0.3	0.9	2.3	3.3	6.8	14.6
Rochester.....	0.0	0.6†	0.3	0.4	1.7	2.1	2.9	9.6	12.8
Patterson.....	0.0	0.7	0.0	0.9	1.0	3.3	4.1	9.1	19.3
Reading.....	0.0	1.8	0.9	0.4	1.6	6.0	10.0	31.9	42.0
Buffalo.....	0.2*	0.3	0.5	0.6	2.7	3.9	8.1	15.4	22.8
New York.....	0.3	0.4	0.5	0.8	1.3	2.6	3.2	8.0	13.5
Jersey City.....	0.3	0.6*	0.0	0.2	0.9	2.7	3.9	8.1	15.4
Scranton.....	0.7*†	0.0*	0.0†	1.4	1.8	2.4	3.8	9.3	31.5
Pittsburgh.....	0.7†	0.7†	0.6	0.9	2.4	3.9	7.7	15.9	65.0
Elizabeth.....	0.8	0.8	0.0	0.9	1.6	2.4	3.3	8.0	16.6
Trenton.....	0.8*	0.5*	0.0	1.1	2.1	8.2	8.6	23.3	28.1
Eric.....	0.8*	0.5*	0.0	1.0	0.9	2.3	6.9	49.0	46.6
Albany.....	1.3†	1.5	0.8	1.1	1.8	5.6	8.0	18.6	17.4
Philadelphia.....	1.4	0.7	0.9	0.9	1.1	2.2	4.9	11.2	41.7
Camden.....	1.6	0.8	2.5	2.8	4.4	5.9	4.9	4.5	4.0

* All typhoid deaths were stated to be in nonresidents.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

Incomplete data.

† Typhoid deaths for Scranton furnished by Pennsylvania Department of Health, Harrisburg.

† Rate computed from 1930 census population, as no local estimate was given.

† Corrected rate. In review for 1936 Yonkers reported cases instead of deaths.

Six of the large New England cities report no death from typhoid in 1937 (table 1). Bridgeport and Somerville report no death for four years in succession. The record for Springfield with no deaths for three years in succession was marred in 1937 by the death of a nonresident. It is only fair that account should be taken of this fact and mention made that Springfield continues its excellent record with no death among residents for four consecutive years. Worcester had but one death in 1936 and Boston but three deaths; all of these are reported as having occurred in nonresidents. The New England cities as a whole (popula-

TABLE 3.—*Death Rates of Nine Cities in South Atlantic States from Typhoid per Hundred Thousand of Population*

	1937	1936	1935	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1905-1910
Tampa.....	0.0	0.0	6.6	3.0	3.8	19.1	43.9#	....	....
Norfolk.....	0.8	0.0	5.4*	4.2	2.2	2.8	8.8	21.7	42.1
Baltimore.....	1.2	0.9	1.5	1.4	3.2	4.0	11.8	23.7	35.1
Wilmington.....	1.8	0.9	0.9*	1.5	3.1	4.7	25.8#	23.2	33.0
Washington.....	1.9	1.6	2.6	2.6	2.8	5.4	9.5	17.2	36.7
Atlanta.....	1.9†	3.2†	4.6	7.2	11.1	14.5	14.2	31.4	58.4
Richmond.....	3.2†	2.7	2.7	2.5	1.9	5.7	9.7	15.7	34.0
Jacksonville.....	4.0	1.3	0.0	1.7	4.4	....	....	....	....
Miami.....	6.3	3.1†	2.8	2.2	3.5	....	....	....	....

Incomplete data.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

† Rate computed from population as of April 1, 1930, as no estimate for July 1, 1933, was made by the Census Bureau.

tion 2,640,933) again report the lowest rate for any group. Their rate of 0.45 is not quite as low as that of 1936 (0.42). There were recorded twelve deaths in 1937 (but eleven deaths in 1936).

The Middle Atlantic states have a group rate which is but slightly less than for the preceding two years (0.51 in 1937, 0.56 in 1936). There have been no deaths recorded in Syracuse and Utica for the two years 1936 and 1937. Scranton reports one death of a nonresident.

TYPHOID IN LARGE AMERICAN CITIES

As in the case of Springfield, mention should be made of the fact that Scranton has passed through four consecutive years with no resident death. The honor roll for this group of cities has improved over 1936, there being seven cities which record no death in 1937, four additional cities which report all deaths among non-residents, and two additional cities in which one third or more of the deaths were stated to be in nonresidents.

TABLE 4.—Death Rates of Eighteen Cities in East North Central States from Typhoid per Hundred Thousand of Population

	1937	1936	1935	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Fort Wayne.....	0.0	0.0	0.0	2.2	4.2	12.9	7.3	.....	.....
South Bend.....	0.0	0.0	0.9	0.7	0.8	1.6	6.5	.....	.....
Milwaukee.....	0.0	0.3	0.0	0.2	0.8	3.3	8.9	.....	15.8
Canton.....	0.0	1.0*	0.9	0.9	1.4	1.4	2.4	15.4	22.8
Chicago.....	0.3	0.3	0.4	0.6	1.3	4.1	8.1	10.0	15.7
Detroit.....	0.3	0.5	0.3	1.1	1.0	2.0	9.1	25.5	29.7
Cleveland.....	0.5	1.0	0.6	1.1	1.1	1.9	9.1	29.5	35.1
Grand Rapids.....	1.0*	0.6*	0.0	0.2	1.0	7.2	19.2	31.4	37.5
Youngstown.....	1.1	1.1†	1.3	1.3	3.0	5.8	10.6	20.5	30.4
Toledo.....	1.2*	1.0†	1.3	1.4	2.5	3.2	3.4	7.8	30.1
Indianapolis.....	1.3	1.9†	1.3	1.4	2.6	3.3	9.3	14.8	22.5
Cincinnati.....	1.3†	1.8†	1.0	2.0	2.1	3.5	7.1	15.8	40.0
Dayton.....	1.4†	3.7*	2.0	0.8	1.5	2.4	10.6	21.0	15.7*
Columbus.....	1.5	3.7*	0.7	0.8	1.5	3.7	5.7	16.4	35.0
Akron.....	1.6†	0.8†	0.0	0.9	0.2	5.0	17.5	32.0	46.9
Peoria.....	1.7*	1.7*	0.0	1.9	6.2	4.6	22.7	18.8	.....
Evansville.....	2.7†	0.0	4.7	0.7	1.6	.....	.....	.....	.....
Flint.....	3.0†	1.2	0.6	.....	.....	.....	.....	.....	.....

* All typhoid deaths were stated to be in nonresidents.
† One third or more of the reported typhoid deaths were stated to be in nonresidents.
Incomplete data.
* Rate computed from 1930 census population, as no local estimate was given.

Unfortunately, in providing the figures for Yonkers in 1936 the statistical clerk of the local health department sent in the number of cases although the questionnaire clearly specified deaths. As a result of this error seven deaths (instead of one) were recorded in the tables for the preceding year. Appropriate corrections have been entered in the current review. Every health officer should make it his practice to review personally and check reports giving the number of cases and deaths from the various communicable diseases. In obtaining the figures for the current year a similar mistake was made by the health officer of one of our largest cities. Fortunately, the reviewer caught the mistake before irreparable damage had accrued. New York was undoubtedly spared the embarrassment of an outbreak

TABLE 5.—Death Rates of Six Cities in East South Central States from Typhoid per Hundred Thousand of Population

	1937	1936	1935	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Louisville.....	0.6*	1.4†	1.6	2.3	3.7	4.9	9.7	19.7	52.7
Nashville.....	1.2*	4.4†	7.0	5.6	18.2	17.8	20.7	40.2	61.2
Birmingham.....	1.4	5.0†	4.0	3.9	8.0	18.6	31.5	41.3	41.7
Chattanooga.....	1.7	0.0	2.4	4.7	8.0	10.7	20.8	25.3#	.....
Knoxville.....	3.2	4.1	5.4	7.9	9.3	18.9	27.7	42.5	35.3
Memphis.....	4.9†	4.7†	5.0	.....	.....	.....	.....	.....	.....

* All typhoid deaths were stated to be in nonresidents.
† One third or more of the reported typhoid deaths were stated to be in nonresidents.
Incomplete data.
* Rate computed from 1930 census population, as no local estimate was given.

of typhoid among nonresidents when in August 1937 a transatlantic steamer arrived in the harbor with twenty-five suspicious typhoid cases among its crew. Within eighteen hours the health department laboratory had confirmed the diagnosis. The liner sailed the following day without passengers, returning to its home port with the entire crew including the sick. During the next weeks there occurred fifty-three cases of

typhoid among the crew of this ship, with one death. So far as is known none of the passengers became ill.

The record for the South Atlantic cities is not as good as for 1936 but continues to show a marked improvement over the rate for 1935 (1.96 in 1937, 1.55 in 1936, 2.58 in 1935). There is but one city (Tampa) which reports no death. This is the second consecutive year with no typhoid death in Tampa, which is a significant improvement over the 1935 rate of 6.6. Norfolk, which also reported no death in 1936 (a marked decline from the rate of 5.4 in 1935), reports on resident death in 1937. These two cities, however, continue to lead the list for the nine in their group. Jacksonville has not continued her excellent record of the past few years with a quinquennial average of 1.7 for 1931-1935 and no deaths in 1935; the rate has increased to 4.0 in 1937. This is attributed to the fact that Jacksonville serves as a hospital center for six or

TABLE 6.—Death Rates of Nine Cities in West North Central States from Typhoid per Hundred Thousand of Population

	1937	1936	1935	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Duluth.....	0.0	0.0	1.0	1.0	1.1	1.7	4.4	19.8	45.9
St. Paul.....	0.0	0.7	0.3	0.7	1.2	6.3	.....	10.6	32.1
Wichita.....	0.0	1.9	0.0	0.8	0.8	2.2	6.4	31.1	71.4
Minneapolis.....	0.2*	2.8	2.1	2.1	2.4	5.0	9.4	12.1	11.1
Des Moines.....	0.7	2.3	1.6	1.6	2.1	3.9	6.5	12.1	11.1
Kansas City, Kan.....	0.8*	0.8	0.7	1.6	1.3	3.3	5.7	14.9	40.7
Kansas City, Mo.....	1.1†	0.9*	0.0	0.9	1.5	2.5	10.6	16.2	33.6
St. Louis.....	1.3	0.9*	1.0	.....	.....	.....	.....	.....	.....
Omaha.....	1.4†	0.5	.....	.....	.....	.....	.....	.....	.....

* All typhoid deaths were stated to be in nonresidents.
† One third or more of the reported typhoid deaths were stated to be in nonresidents.
Incomplete data.

seven rural counties surrounding the city. Of the six deaths in 1937, however, it is recorded that five of these occurred among residents. The tendency for residents of urban centers to return from vacations and short trips to neighboring rural areas where sanitary facilities are not of the best is well known to all epidemiologists.

TABLE 7.—Death Rates of Eight Cities in West South Central States from Typhoid per Hundred Thousand of Population

	1937	1936	1935	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Tulsa.....	0.0	0.7†	0.7	1.1	8.3	16.2#	.....	.....	.....
El Paso.....	0.0	6.8†	7.6	4.9	9.1	10.8	20.7	42.8	49.3
Houston.....	2.0	3.8	2.2	3.2	4.8	7.6	14.2	35.1	57.8
Fort Worth.....	2.2	3.3	1.3	4.6	5.9	6.1	16.2#	11.9	27.8
New Orleans.....	2.3†	6.5†	7.4	9.6	9.9	11.6	17.5	20.9	35.6
Dallas.....	3.0*	1.5†	2.9	5.4	7.3	11.2	17.2	.....	.....
Oklahoma City.....	3.1	4.3†	2.5	4.3	4.6	9.3	23.3	29.5	35.9
San Antonio.....	3.8	2.7	3.3	4.2	.....	.....	.....	.....	.....

* All typhoid deaths were stated to be in nonresidents.
† One third or more of the reported typhoid deaths were stated to be in nonresidents.
Incomplete data.
* Rate computed from 1930 census population, as no local estimate was given.

In the East North Central states the rate has again fallen to a low almost equivalent to that of 1937. This group of cities continues to remain in third place, first place being maintained by the New England group and second place by the Middle Atlantic. In the New tenders for third place are the West North Central cities and the Mountain and Pacific group. In the New England, Atlantic and West North Central states there is no city with a rate in excess of 2.0. In the East North Central states there are two such cities (Evansville, Flint) but in each of these cities one third or more of the reported typhoid deaths were stated to be in non-

residents. There are four cities in the group with no typhoid death. Evansville, following an impressive reduction in death rate from 4.7 in 1935 to 0.0 in 1936, reports three deaths in 1937, only one of which, however, occurred in a resident. Of five deaths in Flint, two were stated to be in nonresidents. In August 1937 there occurred an outbreak of thirteen cases with five deaths. The source of infection was ascribed to a food

TABLE 8.—*Death Rates of Eleven Cities in Mountain and Pacific States from Typhoid per Hundred Thousand of Population*

	1937	1936	1935	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Seattle.....	0.0	0.5	0.8	0.6	2.2	2.6	2.9	5.7	25.2
Long Beach.....	0.0	0.6*	0.0	0.2	1.1	2.1#	...	...	...
Spokane.....	0.0	0.8	0.8	1.4	2.2	4.4	4.9	17.1	50.3
Tacoma.....	0.0	0.9	0.0	0.7	1.8	3.7	2.9	10.4	19.0
Oakland.....	0.3	0.3	1.7	1.0	1.2	2.0	3.8	5.7	21.5
Portland.....	0.3	0.6	1.6	0.8	2.3	3.5	4.5	10.8	23.2
San Francisco.....	0.6	0.3†	0.8	0.8	2.0	2.8	4.6	13.6	26.3
Salt Lake City.....	0.7	0.0	1.4	1.0	1.9	6.0	9.3	13.2	41.1
Los Angeles.....	0.7†	1.0†	0.9	0.8	1.5	3.0	3.6	10.7	19.0
San Diego.....	1.6†	1.8†	0.0	1.3	1.0	1.6	7.9	17.0	10.8
Denver.....	2.7	2.0	0.7	1.8	2.6	5.1	5.8	12.0	37.5

* All typhoid deaths were stated to be in nonresidents.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

Incomplete data.

handler, unknown and unlocated until about the middle of the outbreak. In Toledo it is stated that all four deaths were in nonresidents. It is recorded that twenty-two cases of typhoid occurred in a camp for girls and since that time typhoid vaccination has been made compulsory for admission to such camps. Despite the great flood in the Ohio Valley, which interfered with the normal operation of the municipal water works and resulted in the flooding of the vast valley areas of Cincinnati, there were but two resident typhoid deaths in 1937. Of the total of six deaths, four were in nonresidents. The health department attributes this splendid record to the extraordinary precautions taken to maintain the sanitary facilities of the city during flood time, the requirement of boiling all water, and the pro-

TABLE 9.—*Nine Cities with No Typhoid Death in 1936 and 1937*

Bridgeport*	Somerville*	Tampa
Duluth	South Bend	Utica
Fort Wayne†	Syracuse	Waterbury

* No typhoid death in four years.

† No typhoid death in three years.

gram of typhoid vaccination. Milwaukee returns to the honor roll with no death in 1937. Chicago and Detroit maintain their excellent low rates for cities of their size (0.3).

The six cities in the East South Central group show a marked lowering in the death rate (3.35 in 1936, 2.10 in 1937). This new rate is less than one-half the average for the quinquennial 1931-1935 (4.81). The actual number of deaths in these six cities dropped from forty-three in 1936 to twenty-eight in 1937. Louisville and Nashville record no death in a resident in 1937. Again this is a noteworthy record for Louisville—a city literally covered with water during the flood. The two deaths which did occur in 1937 were both in nonresidents. It is estimated that during the time of the flood 221,000 citizens received vaccination against typhoid. Chattanooga, with no death in 1936, reports two deaths in residents in 1937. Birmingham reports four deaths,

all in residents. Memphis continues to have a high rate, which deserves special comment. Among the fourteen deaths six were in residents, eight in nonresidents. There was no death from typhoid among the white residents of Memphis either in 1937 or in

TABLE 10.—*Death Rates from Typhoid in 1937*

Honor Roll: No Typhoid Deaths (Twenty-Seven Cities)		
Bridgeport	Newark	St. Paul
Canton	New Bedford	Syracuse
Duluth	Paterson	Tacoma
El Paso	Reading	Tampa
Fall River	Rochester	Tulsa
Fort Wayne	Seattle	Utica
Long Beach	Somerville	Waterbury
Lynn	South Bend	Wichita
Milwaukee	Spokane	Yonkers

First Rank: from 0.1 to 1.9 Deaths per Hundred Thousand (Fifty-Two Cities)		
Buffalo.....	0.2*	Seranton..... 0.7*
Minneapolis.....	0.2*	Springfield..... 0.7
Chicago.....	0.3	Cambridge..... 0.8
Detroit.....	0.3	Elizabeth..... 0.8
Jersey City.....	0.3	Erie..... 0.8*
New York.....	0.3	Kansas City, Kan. 0.8*
Oakland.....	0.3	Norfolk..... 0.8
Portland.....	0.3	Trenton..... 0.8*
Boston.....	0.4*	Lowell..... 1.0
Providence.....	0.4	Grand Rapids..... 1.1*
Cleveland.....	0.5	Hartford..... 1.1
Worcester.....	0.5*	St. Louis..... 1.1†
Louisville.....	0.6*	Youngstown..... 1.1†
San Francisco.....	0.6	Baltimore..... 1.2
Des Moines.....	0.7	Nashville..... 1.2*
Los Angeles.....	0.7†	New Haven..... 1.2
Pittsburgh.....	0.7†	Toledo..... 1.2*
Salt Lake City.....	0.7	

Second Rank: from 2.0 to 4.9 (Thirteen Cities)		
Houston.....	2.0	Dallas..... 3.0*
Fort Worth.....	2.2	Flint..... 3.0†
New Orleans.....	2.3†	Oklahoma City... 3.1
Denver.....	2.7	Richmond..... 3.2†
Evansville.....	2.7†	

Third Rank: from 5.0 to 6.3 (One City)	
Miami.....	6.3

* All typhoid deaths were stated to be in nonresidents.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

1936 and only one white death in 1935. During the past three years there have occurred eighteen deaths in residents from typhoid, of which seventeen were in Negroes. Since the Negro population of Memphis is but 38 per cent of the total, the ratio of Negro to white deaths is statistically significant. The typhoid problem of Memphis involves the Negro, his mode of life, his

TABLE 11.—*Number of Cities with Various Typhoid Death Rates*

	No. of 10.0 and Over	5.0 to 9.9	2.0 to 4.9	1.0 to 1.9	0.1 to 0.9	0.0
1906-1910.....	77	75	2	0	0	0
1911-1915.....	79	58	19	2	0	0
1916-1920.....	84	22	32	30	0	0
1921-1925.....	59	12	17	48	12	0
1926-1930.....	92	3	10	30	37	12
1931-1935.....	93	0	6	17	28	42
1936.....	93	2	6	30	23	10
1937.....	93	2	6	23	28	12
1938.....	93	1	7	13	29	14
1939.....	93	0	7	18	19	33
1940.....	93	0	0	11	27	33
1941.....	93	0	7	15	18	23
1942.....	93	0	3	15	21	29
1943.....	93	0	1	13	26	36
1944.....	93	0	1	13	26	27

custom of wandering into the cotton lowlands of the adjoining states, the inadequacy of whole time local health units, and the lack of an immunization program. During the flood period in January and February 1937, 30,000 refugees passed through the temporary camps established in Memphis and were vaccinated against typhoid. Apparently the flood had little effect on the incidence of the disease.

TYPHOID IN LARGE AMERICAN CITIES

The West North Central group again reports substantially the same number of deaths as have occurred during the past two years (twenty-one in 1937, twenty-two in 1936, twenty-three in 1935). Three cities record no death in 1937 (Duluth, St. Paul, Wichita). In Duluth there has been no death for two consecutive years and its excellent record is maintained. In Minneapolis and Kansas City, Kansas, the one death each

TABLE 12.—Total Typhoid Rate for Seventy-Eight Cities, 1910-1937 *

	Population	Typhoid Deaths	Typhoid Death Rate per 100,000
1910.....	22,573,435	4,637	20.54
1911.....	23,211,341	3,930	17.02
1912.....	23,835,399	3,132	13.14
1913.....	24,457,989	3,281	13.43
1914.....	25,091,112	2,434	11.03
1915.....	25,713,246	2,491	9.47
1916.....	26,257,550	2,016	6.34
1917.....	26,865,408	1,624	7.50
1918.....	27,086,696†	1,151‡	6.73
1919.....	27,735,083†	1,088	4.15
1920.....	28,244,878	1,141	3.85
1921.....	28,830,062	963	3.35
1922.....	29,473,246	950	3.26
1923.....	30,057,430	943	3.16
1924.....	30,701,014	1,079	3.07
1925.....	31,315,898	907	2.84
1926.....	31,929,752	648	1.99
1927.....	32,543,966	625	1.89
1928.....	33,158,150	537	1.59
1929.....	33,772,334	554	1.61
1930.....	34,386,717	563	1.60
1931.....	35,137,915	442	1.24
1932.....	35,691,815	423	1.18
1933.....	35,691,815	413	1.17
1934.....	35,401,715	345	0.98†
1935.....	35,401,715	336	0.93‡
1936.....	36,216,404	280	0.76§
1937.....	36,771,757		

* The following fifteen cities are omitted from this table because data for the full period are not available: Canton, Chattanooga, Dallas, Fort Wayne, Jacksonville, Knoxville, Long Beach, Miami, Oklahoma City, South Bend, Tampa, Tulsa, Utica, Wichita, Wilmington.

† Data for ninety-three cities in 1935 was 1.03 (total population 37,437,812, typhoid deaths 385), whereas in 1930 it was 1.64, and in 1933 and 1934 it was 1.24 and 1.25, respectively. The 1931-1935 average for the ninety-three cities is 1.31.

‡ Rate for ninety-three cities in 1936 was 0.96 (total population 38,249,094, typhoid deaths 365).

§ Rate for ninety-three cities in 1937 was 0.82 (total population 38,885,435, typhoid deaths 318).

Special Note.—Deaths for 1936 have been corrected, as Yonkers originally reported seven deaths and later corrected report to one death.

was stated to be in nonresidents. Following a period of two consecutive years with no death and the recording of two resident deaths in 1936, Wichita returns to the honor roll with no death in 1937.

The eight cities in the West South Central group show a marked improvement over the rates for preceding years (2.34 in 1937, 3.99 in 1936, 3.82 in 1935). The 1937 rate is approximately one half of the average for the five year period 1931-1935 (5.36). The actual number of deaths in this group of cities dropped from seventy-nine in 1936 to forty-nine in 1937. In 1936 three of the eight cities recorded rates in excess of 4.0. In 1937 there was no city with a death rate as high as 4.0. In Dallas it is stated that all of the nine deaths recorded were in nonresidents. Of twelve deaths reported for New Orleans, nine were in nonresidents. Again it is well to emphasize a variation in statistical practices encountered throughout the country. Table 7 records the death rate in Dallas in 1937 as 3.0. Assuming that all of the nine nonresident deaths occurred in persons residing within the state of Texas and further assuming the same statistical practice which is used in Chicago, where nonresident deaths are charged back to Illinois communities, the death rate in Dallas in 1937 would be 0.0 instead of 3.0. This but emphasizes the need of a common basis on which to record statistical evidence.

The cities in the Mountain and Pacific states show a continued reduction in the rate (0.68 in 1937, 0.80 in 1936). There were recorded twenty-eight deaths in 1937, thirty-two deaths in 1936. In 1937 there were four cities with no death (Seattle, Long Beach, Spokane, Tacoma). There was but one city with a rate in excess of 2.0 (Denver). Among ten deaths occurring in Los Angeles, six were in nonresidents. Of four deaths in San Francisco, three were in residents. Tacoma, after two consecutive years of freedom from typhoid and the reporting of one resident death in 1936, returns in 1937 to the honor roll with no death.

THE HONOR ROLL

The number of cities with no death from typhoid has increased to twenty-seven. In 1936 there were but eighteen such cities. However, in 1935 there were twenty-four cities on the honor roll. We pay special tribute to the nine cities listed in table 9, which report no typhoid death in 1936 and 1937. Bridgeport and Somerville have had no typhoid death in four consecutive years; Fort Wayne in three consecutive years. There remains but one city in the third rank with a death rate in excess of 5.0. Several of the cities in the first rank would appear on the honor roll were they not charged with deaths in nonresidents.

An examination of table 11 shows the distinct swing "to the right." A new high of twenty-seven has been attained for cities with no deaths; a new low of but one for cities with a death rate from 5.0 to 9.9.

LOWEST RECORD REACHED

For the seventy-eight cities for which complete data are available since 1910 there occurred 280 deaths from typhoid in 1937, which is the lowest of record (336 in 1936). The rate for this group of cities is for the third consecutive year less than 1.0. The rate for the ninety-three cities studied in 1937 is also below 1.0 (0.82) and considerably below the corresponding rate for 1936 (0.96). This statistical study again shows a downward trend in the death rate from typhoid in the large cities of the United States. Some small outbreaks have been reported but none of epidemic proportion.

TABLE 13.—Total Typhoid Death Rate per Hundred Thousand of Population for Ninety-Three Cities According to Geographic Divisions

	Population	Typhoid Deaths		Typhoid Death Rates				
		1937	1936	1937	1936	1935	1934	1933
New England.....	2,640,933	12	11	0.45	0.42	0.49	0.70	1.31
Middle Atlantic.....	13,426,805	68	74	0.51	0.56	0.55	0.80	1.40
South Atlantic.....	2,609,531	61	40	1.96	1.55	2.33	2.70	4.50
East North Central..	9,870,249	61	70	0.62	0.72	0.60	0.75	1.29
East South Central..	1,330,969	23	43	2.10	3.35	3.04	4.81	8.31
West North Central..	2,718,245	21	22	0.76	0.79	0.85	1.24	1.83
West South Central..	2,054,616	49	32	2.34	3.59	3.82	5.36	7.23
Mountain and Pacific	4,144,057	28	32	0.68	0.80	0.88	0.88	1.50

* Lacks data for Jacksonville and Miami.
† Data for South Bend for 1925-1929 are not available.
‡ Lacks data for Oklahoma City in 1926.
§ Lacks data for Oklahoma City.

Routine vaccination of the population is not practiced except under flood conditions. However, in progressive communities vaccination is urged for contacts to cases and for persons who travel widely in countries where sanitary conditions are not of the best. Noteworthy is the improvement in the South, where the prevalence of typhoid in surrounding rural areas continues to handicap materially the large cities in attaining a lower death rate from typhoid.

THE PHYSICAL ASPECTS OF ULTRAVIOLET THERAPY

W. W. COBLENTZ, PH.D., SC.D.

WASHINGTON, D. C.

Modern ultraviolet therapy has an interesting historical background. Following the observations of Huldshinsky, who in 1919 cured rickets in children by means of rays from the mercury quartz lamp, advancements have been rapid. It was shown in turn by various investigators that irradiation would produce in foods an antirachitic effect, that this induced property was destroyed by excessive irradiation, that the activatable substances in foods were ergosterol and a closely related compound associated with cholesterol and, to some extent, probably other sterols. A particularly valuable tool in the development of this knowledge has been the spectroscope. Considerable information has been accumulated about the spectroscopic properties of vitamin D and related compounds. It is well known that every chemical compound has a characteristic absorption spectrum. Heilbron and his collaborators¹ reported that the ultraviolet absorption spectrum of cholesterol has only a general absorption, which means that it has no bands of selective absorption. They reported also that cholesterol ordinarily contains a small quantity of a foreign substance that has well defined absorption bands at 2,690, 2,800 and 2,930 angstroms, respectively. This substance appears to be a precursor of vitamin D. It disappears on irradiation and the appearance of antirachitic potency. Unfortunately the ultraviolet absorption bands, if any, of vitamin D are not sufficiently pronounced and sufficiently different from that of ergosterol to make possible an exact identification of the antirachitic substance.

In chart 1 (see additional data² in chart 2) is shown the ultraviolet absorption spectrum of exceptionally pure ergosterol, dissolved in optically pure 95 per cent alcohol (concentration, 1 Gm. per liter) before and after irradiation with a quartz mercury vapor lamp, as described by Bills and his collaborators.³ The sharp absorption maximums of the nonirradiated oil at 2,700, 2,820 and 2,935 angstroms (270 millimicrons, $m\mu$ in the charts), respectively, are to be noted.

Starting with a nonirradiated stock solution of ergosterol, having no antirachitic activity, Bills and his collaborators³ found that, although no new absorption bands occurred, after seven and a half minutes' irradiation the animal tests revealed the development of an enormous antirachitic potency, 150,000 times that of average cod liver oil. After an exposure of twenty-two and a half minutes the potency increased to 250,000 times that of average cod liver oil. After an irradiation of thirty minutes the maximum at 2,935 angstroms had disappeared; the maximum at 2,820 angstroms was still conspicuous; the maximum at 2,700 angstroms (chart 1) was decidedly distorted, showing the development of a new band at 2,520 angstroms, and the antirachitic potency had dropped to 200,000 times that of the cod liver oil used as a standard. After three hours' irradiation, when the new absorption band at 2,480

angstroms had developed to its maximum intensity, the antirachitic potency had almost vanished. Continuing the irradiation for from four to fifteen hours had but little effect on the new absorption spectrum, which has a maximum at 2,480 angstroms. The antirachitic potency could not be restored, showing that the new photochemical product is not vitamin D, for its appearance coincides with the destruction of antirachitic potency. As a result of these biologic tests with more than 7,000 rats, Bills and his collaborators concluded that the spectroscope cannot replace the biologic method in studying the formation of vitamin D because the wavelengths absorbed by vitamin D and by which it is destroyed apparently lie in the same spectral region as the wavelengths which activate ergosterol.

According to Morton, Heilbron and Kamm¹ the destruction of vitamin D is the result of excessive irradiation (though not exclusively) by wavelengths shorter than about 2,700 angstroms. Reerink and Van Wijk⁴ report that

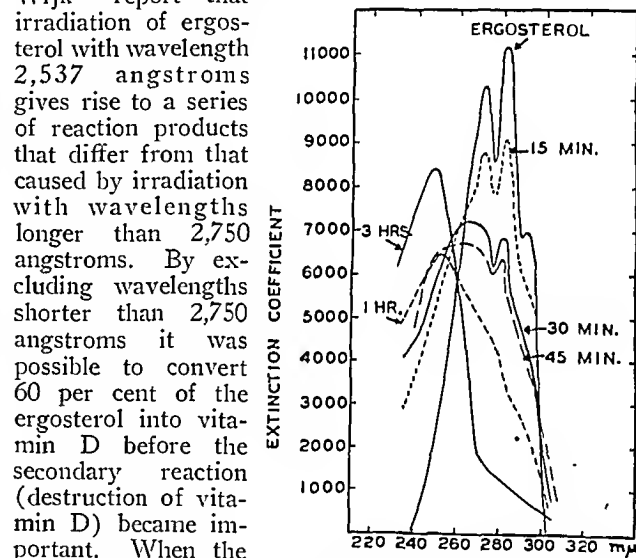


Chart 1.—Effect of irradiation for different lengths of time on the ultraviolet absorption spectrum of ergosterol.

only a much smaller amount of ergosterol could be converted into vitamin D before destructive action interfered.

Using monochromatic radiation, Marshall and Knudson⁵ reported that the highest concentration of vitamin D which could be produced by direct irradiation of ergosterol was 35 per cent. They also report that vitamin D is destroyed by radiation of the same wavelengths that produce it.

No investigations appear to have been made to determine whether, after destruction of vitamin D by the shorter ultraviolet wavelengths (from 2,480 to 2,650), the antirachitic activity can be restored by irradiation with the photochemically effective wavelengths at 2,894 to 2,967 angstroms respectively. In this connection, attention is called to an interesting photochemical reaction that occurs in glass, in which the same wavelength can restore or destroy a chemical constituent, depending on the wavelengths (shorter or longer) used in the previous irradiation.⁶

1. Heilbron, I. M.; Kamm, E. D., and Morton, R. A.: The Absorption Spectrum of Cholesterol and Its Biological Significance with Reference to Vitamin D, *Biochem. J.* **24**: 78, 1927. Morton, Heilbron and Kamm, *ibid.*, On Ergosterol, *J. Chem. Soc. London* **268**: 2000 (Aug.) 1927.
2. Bourdillon, R. B.; Fischmann, C.; Jenkins, R. G. C., and Webster, T. A.: The Absorption Spectrum of Vitamin D, *Proc. Roy. Soc. London, Series B* **104**: 561, 1929. von Wijk, A.; Reerink, E. H., and Mörkofer, W.: Solar Radiation and Vitamin D, *Strahlentherapie* **39**: 3, 1930.
3. Bills, C. E.; Honeywell, Edna M., and Cox, W. M., Jr.: Quantitative Biophysical Studies on the Activation of Ergosterol, *J. Biol. Chem.* **50**: 557 (Dec.) 1928.

4. Reerink, E. H., and von Wijk, A.: The Vitamin D Problem; I. The Photochemical Reactions of Ergosterol, *Biochem. J.* **23**: 1294, 1929.
5. Marshall, A. L., and Knudson, A.: Formation of Vitamin D in Ergosterol by Monochromatic Radiation, *J. Am. Chem. Soc.* **52**: 2304 (May) 1930.
6. Coblenz, W. W., and Stair, R.: Ultraviolet Transmission Changes in Glass as a Function of the Wavelength of the Radiation Stimulus, *J. Res. Nat. Bur. Stds.* **13**: 773 (Dec.) 1934.

Early in these investigations Hess⁷ reported that rats fed on untreated cadaver and calf skin developed rickets, whereas all rats that received irradiated skin were protected against rickets. The logical deduction seemed to be that the antirachitic effect was brought about by activation of the cholesterol (and ergosterol) in the superficial layer of the skin, just as crystalline cholesterol can be activated by irradiation. More significant, however, seems to be his report, even at this early date, that crystalline cholesterol, after prolonged irradiation, gradually became inactive, and eventually became inert in its effect on rickets.

In view of the foregoing results, even though no ill effects seem to have been reported, and an excessive exposure is limited by skin tolerance as manifested by the erythema reaction, the question arises as to the desirability of conducting ultraviolet therapy with lamps emitting an excessive amount of ultraviolet radiation of wavelengths shorter than 2,800 angstroms. For example, in the so-called cold quartz type of mercury vapor lamp, more than 95 per cent of the biologically effective radiation that is emitted is of the wavelength 2,537 angstroms (chart 4). These short wavelengths have a specific germicidal action (chart 2) and, hence, are useful in dermatology. Nevertheless it is a question whether rays of such short wavelengths should be used in general ultraviolet therapy. In view of this uncertainty, the Council on Physical Therapy does not accept, for home use without the direction of a physician, lamps that emit an appreciable amount of ultraviolet radiation of wavelengths shorter than 2,800 angstroms.

Because of the shortcomings of the spectroscopic examination of provitamin D materials, recent investigations on this subject are based principally on the biologic effects in curing rickets. It was early found that different antirachitic substances may not have equivalent values when tested on different species of animals. In view of the great differences in antirachitic action of substances naturally endowed with vitamin D, and of substances antirachitically activated by ultraviolet radiation, as determined biologically on rats and chicks, the question naturally arises as to the effect that may be expected in prevention or healing of rickets in children, either by feeding activated food or by ultraviolet irradiation.

Of especial importance is the question of the intensity of the source of ultraviolet radiation used. The Council on Physical Therapy has had to consider the acceptability of lamps that emitted ultraviolet radiation of so low an intensity that it would have required an exposure of from fifteen to thirty hours or more to produce a threshold erythema (M. P. E.). Yet it was claimed that such lamps effected healing of rickets in rats and chicks.

It was noted that these lamps emitted a large amount of infra-red radiation and the question arose regarding the effect of heat (the temperature of enclosure) on antirachitic action, about which there seems to be a great dearth of information. In this connection the experiments of Ludwig and Ries⁸ are of especial interest. New-born rats were reared in especially constructed enclosures, covered with red, blue and clear glass, and exposed (Bern, Switzerland, high elevation, clear atmosphere) for 200 or more days. Throughout the test these experimenters observed the greatest growth under red glass, which they ascribe to the stimulation of the

"growth vitamin" by red and infra-red rays, as distinguished from vitamin D stimulation by ultraviolet rays.

The specific effect of ultraviolet radiation in healing rickets is one of the chief arguments for using ultraviolet in therapy. If the alleged healing of rickets, with lamps that emit but little ultraviolet, is true, then it would seem to indicate that but little ultraviolet irradiation is required to prevent rickets; also that the importance of ultraviolet in therapy has probably been greatly overestimated and that the high pressure sales promotion of expensive ultraviolet lamps has been a colossal imposition on the purchaser.

From the foregoing discussion, and brief references to investigations of vitamin D, it may be noted that the use of ultraviolet radiation involves a number of very complex, and little understood, biochemical and biophysical phenomena, some of the latter of which will now be described, and their relation to phototherapy will be indicated.

THE SPECTRAL RANGE OF ANTIRACHITIC AND ERYTHEMAL REACTION

The earliest experiments on the spectral range of antirachitic and erythema reaction were confined to the spectral activation of irradiated foods, which, in turn, were fed to rachitic animals to determine the antirachitic effectiveness of the irradiated material. Thus Hess and his collaborators⁹ found that cholesterol, after exposure to homogeneous radiation of wavelengths 2,804 and 3,024 angstroms, had a marked healing effect in rachitic rats, whereas the emission line of the mercury arc at 3,132 angstroms had only a slight or no effect on cholesterol, as determined by its power to heal rickets.

Among the earliest direct determinations of the (antirachitic) healing power of different wavelengths of homogeneous radiations are the observations of Sonne and Rekling,¹⁰ who found that the strong emission lines of the mercury arc at 2,537, 2,650, 2,804, 2,967 and 3,024 angstroms had an antirachitic action, whereas wavelengths at 2,400 and 2,480 angstroms had only a slight effect; the emission line at 3,132 angstroms had a doubtful effect, and the line at 3,663 angstroms had no curative effect at all.

Using filters to limit the spectral range, Maughan¹¹ found that the emission line of the mercury arc at 2,967 angstroms was the most important, and the second in importance in curing rickets (in chickens) was the emission line of wavelength 2,894 angstroms. Considering the difficulties involved in evaluating the radiation intensity, his estimate that the line at 3,024 angstroms is about one fourth as effective as the maximum (at 2,967 angstroms) is in accord with more recent and more extensive research. In agreement with others, he found that the emission line at 3,132 angstroms has no appreciable curative value in healing rickets.

The most recent and most precise evaluation of the spectral antirachitic action of ultraviolet radiation is by Bunker and Harris.¹² The wavelengths of homogeneous radiation were isolated with a powerful quartz mono-

7. Hess, A. F.: The Antirachitic Activation of Foods and of Cholesterol by Ultraviolet Irradiation, *J. A. M. A.* 84: 1910-1913 (June 20) 1925.
8. Ludwig, F., and Ries, J. V.: Effect of Ultraviolet and Infra-Red on Growth, *Strahlentherapie* 39: 485, 1931.

9. Hess, A. F., and his collaborators: The Antirachitic Activity of Monochromatic Radiations, *Proc. Soc. Exper. Biol. & Med.* 1927.
10. Sonne, W. T. J., and Rekling, A. F.: Die experimentelle Rattchenrachitis, *Licht, Hospitalstid.* 70: 926, 1928.
11. Maughan, J.: The Antirachitic Activity of Monochromatic Radiations, *Am. J. Physiol.* 8: 1001 (1925).
12. Bunker, John W. M., and Harris, Robert S.: Precise Evaluation of Ultraviolet Therapy in Experimental Rickets, *New England J. Med.* 216: 165 (Jan. 28) 1937.

hromator, and their intensities were evaluated radiometrically. More than 300 albino rats were used in these radiation tests. Since complete healing (as judged by x-ray and line test) cannot be judged accurately, their criterion for judging antirachitic action was the degree of partial calcification known as the equivalent of one teenbock unit of standard vitamin D. The principal emission lines of the mercury arc between 2,537 and 3,132 angstroms inclusive were demonstrated to have antirachitic properties, and the adjacent lines at 2,483 and 3,132 angstroms, respectively, were found inactive.

In chart 2 is shown the spectral antirachitic response or an equal energy spectrum, as deduced from the data published by Bunker and Harris.¹² The response curve is not necessarily smooth and free from indentations, although it is so depicted for the purpose of this discussion. In chart 2 also is given the spectral absorption of ergosterol.² From this it can be seen that if, as some suppose, the healing of rickets is associated in some manner with the activation of the sterols (ergosterol, cholesterol) present in the superficial layer of the skin, then, since photochemical action occurs only in the region of absorption, there should be a close parallelism between these two curves, as indicated. For the present this appears to be an interesting coincidence, the biologic significance of which awaits solution. For comparison there is shown in the chart the maximum lethal action for the equal energy spectrum for *Bacillus coli*.¹³ This appears to lie in the region at 2,600 angstroms and is probably not true for bacteria in general. However, the fact that many kinds of bacteria survive the ultraviolet in sunlight indicates that wavelengths shorter than 2,900 angstroms may be expected to have the greatest lethal action.

The Spectral Erythemic Reaction.—In chart 2 is shown the average spectral erythemic reaction of the untanned skin to an equal energy spectrum,¹⁴ based on the researches of Hausser and Vahle, of Luckiesh, Holladay and Taylor, of Coblenz, Stair and Hogue, and of Rüttenauer. Considering the fact that Hausser, Coblenz and Rüttenauer used wavelengths of homogeneous radiation isolated with a spectroradiometer as stimuli, whereas Luckiesh used wide bands of filtered radiation, there is good agreement among the various observers. One difficulty in estimating a threshold or minimum perceptible erythema (defined as a reddening of the skin that disappears in less than eighteen hours) is that for the longer wavelengths, for a slight over-exposure, pigmentation is visible within twenty-four hours after exposure. Moreover, the minimum perceptible erythema is easily affected by the kind of diet (acid foods increase the erythema reaction and pigmentation; alkali foods weaken erythema and pigmentation¹⁵) and also by external conditions. For example, wiping the irradiated skin with benzene or toluene causes the minimum perceptible erythema to disappear, and wiping with alcohol, twenty-four hours after irradiation, causes a reddening of some of the exposures that were invisible. Hence, before making an erythema test the parts that are to be irradiated should be washed with soap and water, thoroughly dried, and left untouched for twenty-four hours or more.

The spectral reaction differs from (and seems less complex than) the visual response in that there are two maximums, at 2,500 and 2,967 angstroms respectively. In contrast with the visual response, these maximums are not affected by the intensity or the spectral composition (the "color") of the source. This deduction follows from the close agreement between the observed and calculated erythemogenic efficiencies of various sources of heterogeneous ultraviolet radiation.¹⁶

By selecting a group of healthy persons of average skin pigmentation there seems to be no difficulty for a manufacturer to establish an erythema standard for judging the ultraviolet output of a lamp. This seems to follow from the fact that, from a knowledge of the ultraviolet spectral energy distribution of a lamp and the average spectral erythema response,¹⁴ I have

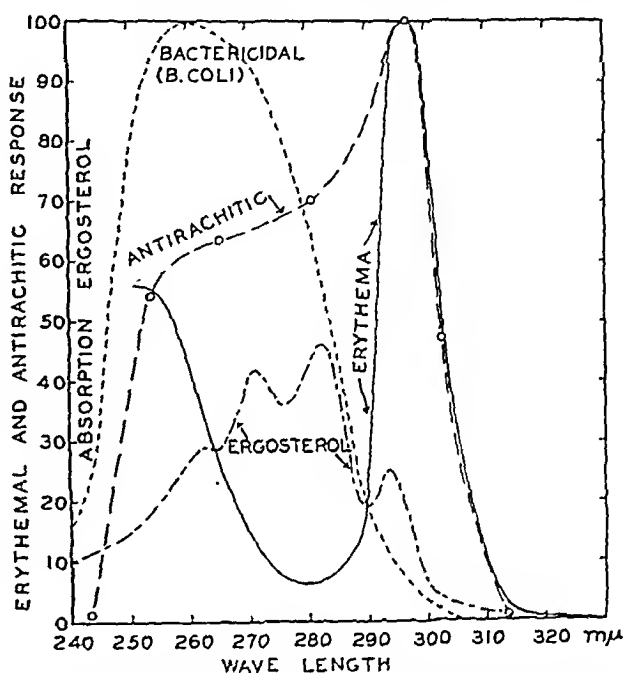


Chart 2.—The antirachitic response for an equal energy spectrum is shown, by circles connected by the broken line, as compared with the spectral absorption of ergosterol. The chart also shows the curve of lethal action for *Bacillus coli* and the average spectral erythemic reaction of the untanned skin to an equal energy spectrum.

repeatedly verified, by calculation, the claims made by a manufacturer that his lamp produces an erythema in a certain time of exposure.

As shown in chart 2, the wavelength limits of antirachitic and erythema action are in close coincidence. Hence, since the time of exposure to ultraviolet radiation depends on skin tolerance as indicated by the erythema response, it is apparent that, with the lamps now available in ultraviolet therapy, the time of exposure is limited by skin tolerance.

In response to a request for a simple means of determining whether a lamp emits ultraviolet radiation and in order to protect the public from imposition by purchasing a lamp that emits little or no ultraviolet radiation, the Council on Physical Therapy of the American Medical Association has adopted¹⁷ and, until a more practicable and reliable procedure is proposed, will use the erythema reaction as a basis for judging the

13. Bachem, A.: Ultraviolet as a Bactericide. *Arch. Phys. Therapy* 16: 733 (Dec.) 1935. Bachem, A., and Dushkin, M. A.: *Proc. Exper. Biol. & Med.* 30:703 (March) 1933.

14. Coblenz, W. W., and Stair, R.: Data on the Spectral Erythemic Reaction of the Untanned Human Skin to Ultraviolet Radiation. *J. Research Nat. Bur. Std.* 12:13 (Jan.) 1934; 8:134 (April) 1933.

15. Knebel, T., and Stair, R.: Effect of Diet and Salves on the Erythema Reaction and Pigmentation. *Strahlentherapie* 45:243 (Oct.) 1933.

16. Coblenz, W. W.; Stair, R., and Hogue, J. M.: Tests of a Balanced Thermopile and Filter Radiometer as a Standard Ultraviolet Dosage Intensity Meter. *J. Res. Nat. Bur. Std.* 4:719 (June) 1932.

17. Council on Physical Therapy: Acceptance of Sunlamp. *J. A. M. A.* 102:42 (Jan. 6) 1934.

effectiveness (the ultraviolet output) of a sun lamp. The Council does not prescribe the dosage, which is left to the judgment of the physician. It requires for acceptance that a lamp, sold at a special (advanced) price, shall emit ultraviolet of sufficient intensity, at a fixed distance (2 feet) to produce an erythema (M. P. E.) in one hour—certainly a reasonable requirement.

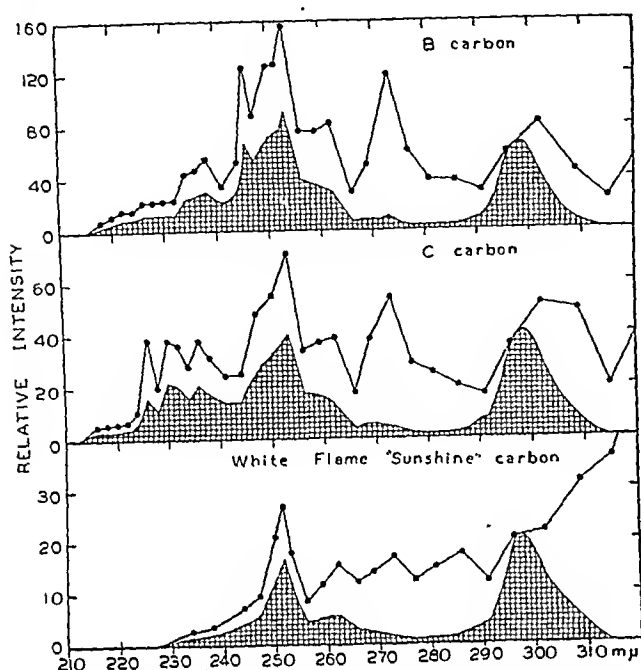


Chart 3.—Erythemal effectiveness in different parts of the spectrum. The distribution of energy is shown in the ultraviolet spectrum of the carbon arc, with cored electrodes (White Flame "Sunshine" carbon), electrodes impregnated with iron oxide (B carbon), and with the oxides of a number of metals (C carbon). The shaded areas represent the product of the relative spectral intensities and the spectral erythemal response.

SOURCES OF RADIATION FOR USE IN ULTRAVIOLET LIGHT THERAPY

From the coincidence of the spectral range of wavelengths of the erythema and the antirachitic reaction it is evident that, with the sources of ultraviolet radiation now in general use (having a strong emission in the spectral region of 2,500 and 3,000 angstroms respectively), the dosage time of exposure that can be employed without causing a burn is determined by skin tolerance as measured by the erythema reaction.

This is evident from a study of charts 3 and 4. Chart 3 depicts the distribution of energy in the ultraviolet spectrum of the carbon arc, cored electrodes impregnated with iron oxide (B carbon) and with the oxides of a variety of metals (C carbon) being used. The shaded area, which is the product of the relative spectral intensities and the spectral erythemal response (chart 2), shows the erythemal effectiveness in different parts of the spectrum (wavelengths; 310 millimicrons = 3,100 angstroms).

Similarly, in chart 4 is shown the ultraviolet spectral energy distribution (relative intensities) of the sun, of magnesium (Mg), and of various forms of the mercury vapor arc, in Correx glass and in fused quartz enclosures. Here the unshaded areas give the intensities of the individual emission lines and the dark areas give the relative effectiveness of each line in generating an erythema.

In the treatment of rickets by irradiation there is but little difference in the erythemal and antirachitic efficiencies of the various sources of ultraviolet radiation

now in use. For example, on the basis of the results published by Bunker and Harris,¹² assuming that the spectral antirachitic response in human beings is the same as observed on experimentally induced rickets in rats (chart 2), the ratio of the calculated antirachitic efficiency of the ultraviolet radiation from various sources is as follows: "Therapeutic C" (poly-metal) cored carbon arc (antirachitic ÷ erythema = 1.35); low voltage, high temperature mercury vapor arc in quartz (Uviarc) 1.14; high temperature, mercury vapor arc in Correx D glass (General Electric Company, S-1) 1.14; low vapor pressure, high voltage, low temperature (so-called cold quartz) mercury vapor arc in quartz 1.12 and midlatitude, midsummer, midday, sea level sunlight 0.95.

From this it can be seen that, of the various artificial sources now in use, only with the carbon arc impregnated with metals (Mg) having a strong emission in the spectral region of from 2,700 to 2,900 angstroms is it possible to deliver an appreciably (35 per cent) greater amount of antirachitic radiation than erythemal radiation, in the time fixed by skin tolerance as determined by the erythema reaction.

This does not take into consideration the efficiency of antirachitic action as dependent on the before mentioned effect, possibly of different wavelengths on calcium and phosphorus metabolism, and also on the deactivation effect of short wavelengths on vitamin D, which may militate against long exposures with sources having a strong emission of wavelengths shorter than about 2,800 angstroms, e. g., the so-called cold quartz lamp, in which over 95 per cent of the activating radiation is in the resonance emission line at 2,537 angstroms. On the other hand, such a source (cold quartz) permits an overexposure, by a factor of 5 or perhaps more,

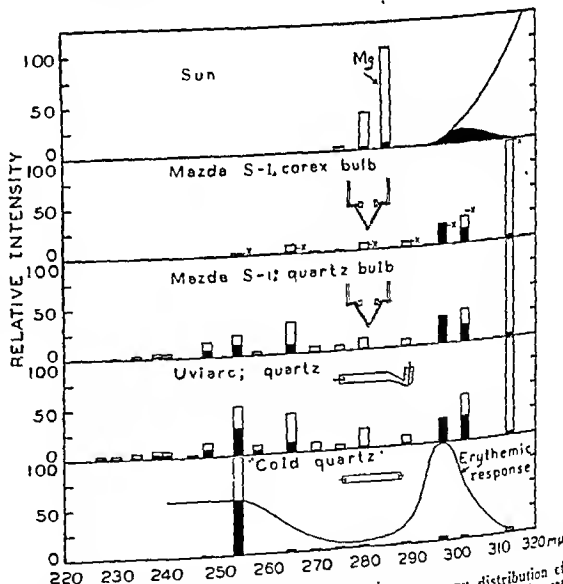


Chart 4.—Comparison of the ultraviolet spectral energy distribution of sunlight and the light from various forms of lamps. The unshaded areas represent intensities of individual emission lines; the dark areas represent the relative effectiveness of each line in producing an erythema.

without causing a painful watery blister that results from a slight overexposure to sources of ultraviolet having a relatively strong emission of wavelengths 3,100 to 3,200 angstroms. From this it appears that, since the erythema reaction is a measure of skin tolerance, it is indirectly a measure of the effectiveness of the sources of ultraviolet radiation now in use in healing rickets.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF
THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

BURDICK FEVER THERAPY CABINET ACCEPTABLE

Manufacturer: Burdick Corporation, Milton, Wis.

Incidentally it is of interest to note that the amount of ultraviolet radiation that can be applied practically to milk is influenced by the flavor that is developed; also that the antirachitic quality of the irradiated milk is proportional to the total ultraviolet energy imparted to the milk.¹⁸ By using a carbon arc lamp with cored electrodes containing magnesium, which has a strong emission at 2,800 angstroms, more than three times the energy (of wavelengths 2,600-3,100 angstroms) could be imparted to the milk before a perceptible flavor developed, than with sources that are weak in radiation at 2,800 to 2,900 angstroms.

Obviously in the healing of rickets, or in the production of vitamin D in milk, the time of exposure could be greatly prolonged if a source were available that emits radiation predominantly in the spectral band at 2,800 angstroms. However, there are no practicable filters available having a high transmission at 2,800 angstroms to isolate efficiently this spectral band of radiation in the commonest sources of ultraviolet radiation; and the spark discharge between the electrodes of magnesium, which has a strong emission in the region of 2,800 angstroms, is too noisy, too irregular in emission, and too inefficient for use as a source of ultraviolet having strong antirachitic action and a weak erythematogenic action.

In a recent discussion of this subject Seitz¹⁹ quotes data published by Pincussen²⁰ on the emission spectrum of the low pressure discharge through magnesium vapor, in a special ultraviolet-transmitting glass bulb, in which there is strong emission at 2,796 angstroms and especially at 2,852 angstroms (see upper part of chart 4, Mg). The practical application of such a lamp remains to be determined. Hence in the meantime it will be more efficient to shorten the time of exposure to the ordinary sources of ultraviolet radiation in order to avoid production of a burn instead of using a source of filtered radiation emitting wavelengths only in the region of 2,800 angstroms, which have practically no erythematogenic action but which, because of their low intensity, require a long exposure for effective antirachitic action.

From the foregoing discussion it may be noted that since many sources of ultraviolet are weak in radiation of wavelengths shorter than 2,800 angstroms or have glass enclosures to intercept wavelengths shorter than 2,800 angstroms (in the case of the sun, the spectrum terminates at about 2,900 angstroms) the emission line at 2,967 angstroms is useful as a standard for evaluating the effectiveness of sources of radiation in terms of both the erythema and the antirachitic reaction, particularly since the (dosage) time of exposure depends on skin tolerance, as indicated by the erythema reaction.¹⁶

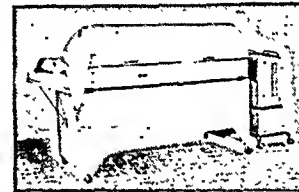
CONCLUSION

It is to be emphasized that the curative properties of a lamp are not necessarily measured by its power to generate an erythema; also that the dosage, whether erythema or suberythema, should be left to the discretion of the physician. However, in order that a lamp may qualify as a therapeutic agent it should emit sufficient ultraviolet to produce an erythema in a reasonable time of exposure (say fifteen minutes or shorter) if the physician desires to give an erythema dose.

18. Weckel, K. G.; Jackson, H. C.; Haman, R., and Steenbock, Harry: Effect of Different Sources of Radiant Energy on the Flavor and Antirachitic Potency of Milk, *Indust. & Engin. Chem.* 28: 653 (June) 1936.

19. Seitz, O.: Ultraviolet Radiators and Their Biologic Evaluation, *Strahlentherapie* 55: 598, 1936.

20. Pincussen, L.: *Handb. d. biolog. Arbeitsmeth. u. Abderhalden* 5: 13, 1933.



Burdick Fever Therapy Cabinet.

The Burdick Fever Cabinet is designed to prevent heat loss from the body in order to maintain the temperature at the desired level during fever treatments. It is used in conjunction with either the Burdick Magnetherm or the Triplex Short Wave unit, which raises the body temperature to the prescribed degree. It is claimed that the cabinet will hold the temperature approximately level at this point for any desired length of time. A forced air conditioning system maintains from 85 to 100 per cent humidity, as desired.

The hinged cabinet cover and the side drop door are made of 16 gage aluminum with double wall construction. The lower section of the cabinet is constructed of 20 gage reinforced steel. The cabinet is finished in ivory. It is 72 inches long by 32 inches wide by 53½ inches high and has a collapsible head rest 12 by 18 inches in dimensions. The latter may be elevated to a position comfortable to the patient. The hinged cover operates by means of a spring counterbalance. When closed, the front edge rests on a hinged side panel which may be dropped outward to simplify placing the patient in the cabinet. This side piece contains a sliding panel 33¾ by 6 inches in size, with smooth rounded edges surrounding the opening. It provides convenient access for administering to the patient's needs during treatment.

The cover of the cabinet is provided with flanges, and the condensed moisture created by the humidifier remains inside the cabinet.

Although the short wave unit is placed at the foot of the cabinet, the control switches are situated at the head end of the cabinet for the convenience of the operator. The main switch controls the air-conditioning fan and is left on during the entire treatment. There are two subsidiary switches to control the heat in the cabinet, which is provided by two dry heat elements of 300 and 400 watt capacity. These are used to preheat the cabinet before treatment and may be used later to raise the temperature inside the cabinet if necessary. A fourth switch regulates the immersion heater in the water pan, providing control for moisture, and has 1,000 watt capacity. A thermometer registering internal heat of the cabinet and a gage indicating relative humidity are also mounted at the head end of the cabinet.

The air-conditioning equipment is placed in the lower part of the cabinet in a moisture-proof container. A constant water level humidifying pan with automatic float valves feeds water from a glass percolator mounted at the foot end of the cabinet. There is a stopcock in the bottom of the pan to permit drainage. The water is vaporized by the immersion heater and circulated by means of a fan and air deflectors which force air through a duct at the foot of the cabinet with a return duct at the head. It is claimed that this provides a uniform temperature and humidity in all parts of the cabinet. Construction of the cabinet permits the induction and maintenance of cabinet temperature not over 1 to 3 degrees above the rectal reading on fevers ranging up to 104 F. and not over 2 to 4 degrees above rectal temperature in fevers from 104 to 106.5 F., according to the firm.

The patient is placed on a thick flexible Hairex mattress covered with rubberized silk and a removable terry cloth cover. This mattress rests on a hard wood rack treated to resist moisture, which supports an inductance cable mounted flush. The inductance cable ends, fitted with sliding rubber stoppers, are pushed through the end of the cabinet, fitting into jacks in the short wave unit.

Preheating of the cabinet shortens the time required to raise the patient's temperature by means of the short wave unit. The unit is shut off when the patient's rectal temperature is within 1 degree of the desired level, since the patient's temperature usually continues to rise after the current is turned off. The firm recommends that an electrical indicating rectal thermometer be used as soon as the short wave current is off. With this in place, the operator may regulate or maintain the rectal temperature by moist and dry heat control switches and the sliding panel in the side of the cabinet.

As evidence of the ability of the Fever Cabinet to maintain the desired temperature level, the firm submitted thirteen temperature charts showing rectal temperatures of 106 F. or more. The average inductance period (current on—current off) was approximately one and one-half hours. Levels between 106 and 107 F. were maintained for five and three-fourths hours on an average. Three charts were submitted to show the constancy with which the rectal temperature may be maintained. Each of these three charts shows that rectal temperatures were held constant at approximately 104 F. for five hours. The temperature and humidity inside the cabinet were given in these three charts, indicating a temperature average of 106.5 F. and showing between 95 and 100 per cent humidity. In addition, the firm states that there have been no reports of any undesirable effects on patients with reference to burns, blood pressure, pulse, respiration, discomfort or delirium.

The unit was tried out in several institutions acceptable to the Council and found to give satisfactory service.

In view of the foregoing report, the Council voted to accept the Burdick Fever Therapy Cabinet for inclusion in its list of accepted devices.

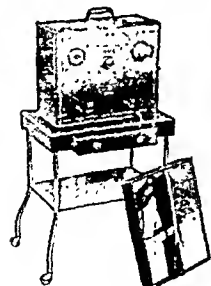
EASTMAN ULTRA SHORT WAVE UNIT, MODEL PSW, ACCEPTABLE

Manufacturer: J. H. Eastman Company, 1304 Harper Avenue, Detroit.

The Eastman Short Wave Unit is recommended for medical and surgical use. It is a portable model designed for use in the office, hospital or home, under the direction of a physician. The machine is housed in a plywood case, with leatherette covering, which is 19 by 16 by 11 $\frac{3}{4}$ inches in dimensions and weighs approximately 58 pounds. The equipment includes two sizes of flexible electrode pads with linen covers, spacing felts and extract linen covers. Additional electrodes are available.

The bakelite panel has one tuning control knob and four patient outlets providing a number of treatment variations—low, medium and high—and surgical currents for monopolar cutting and monopolar or bipolar coagulation. A foot switch is available for use with the electrosurgical currents.

Two high frequency oscillator tubes and two mercury vapor rectifier tubes comprise the circuit. The latter supply rectified current to the plates of the oscillator tubes, thus reducing the tube load. An automatic relay serves as an additional protection to the tubes, as does a multiple switch operating in fixed sequence. This allows the rectifier tubes to heat before closing power (plate) circuit. This switch controls all circuits within the unit. A



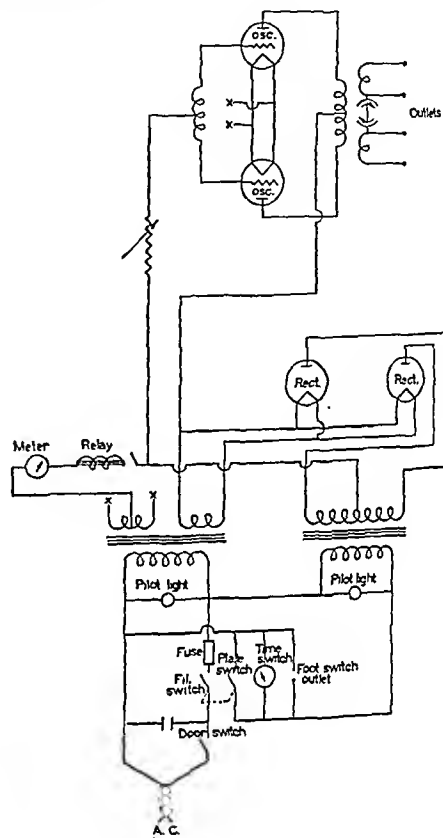
Eastman Ultra
Short Wave Unit,
Model PSW.

neon bulb set in the panel gives direct visualization of proper resonance between oscillating tubes and patient circuit.

Input power required to operate the unit at full load for a period of two hours was 485 watts. The output power was found to be 200 watts as measured by a photoelectric wattmeter. A 200 watt bulb was capacitatively coupled to the electrodes. The brilliance of this bulb was compared with the brilliance of the bulb when connected to a 115 volt alternating current supply. The power was read on an alternating current wattmeter.

To prevent radio interference, the wiring on the primary side is kept as far as possible from the oscillating circuit and radiation from it. A filter condenser is placed across the input to transformer to reduce high frequency feed-back into the supply line. A neon bulb test gave evidence that feed-back had been almost eliminated.

The firm was asked to submit evidence regarding the heating ability of the unit when applied to the living human thigh. It submitted data from tests performed by a reliable investigator. Three healthy male subjects were used, two observations being made on each, first on the right leg and then on the left. The cuff technique was employed, and these were spaced between 8 $\frac{1}{4}$ and 9 inches apart, center to center. The skin under the electrodes was covered with from four to six thicknesses of fluffy white flannel, except in one instance when half-inch thickness of felt was added.



Schematic diagram of circuit.

The temperatures were taken by means of a Leeds and Northrup potentiometer, a "hypodermic needle-thermocouple" being used for the deep muscle temperatures and a specially constructed disk thermocouple for the readings on the skin. The initial temperature was taken and then the current was applied for twenty minutes. The deep muscle temperature was taken with an average interval of sixty seconds from the turning off of the current; the readings of the surface and subcutaneous temperatures were then taken in rapid order. The initial reading for the right leg was used for the initial reading of the left leg. The average thigh circumference was 19.6 inches.

Average Temperatures for Six Observations, Cuff Technique

Deep Muscle		Subcutaneous		Cutaneous		Oral	
Initial	Final	Initial	Final	Initial	Final	Initial	Final
98.7	104.2	93.9	99.5	90.5	93.0	99.0	99.2

With a photoelectric cell wattmeter, the output for the unit was 150 watts and the input 460 watts. When the machine was operated at the aforementioned power values for two hours continuously, the temperature rise of the transformer was well within the limits of safety.

The unit was investigated in a clinic acceptable to the Council and found to give satisfactory service. The automatic safety switch on this device worked efficiently.

In view of the evidence submitted to substantiate the cuff method of application, the Council on Physical Therapy voted to include the Eastman Ultra Short Wave Unit, Model PSW, in its list of accepted devices.

**MODEL C THERMOSPECTRAL LAMP
ACCEPTABLE**

Manufacturer: General Electric X-Ray Corporation, 2012 Jackson Boulevard, Chicago.

The Model C Thermospectral Lamp is recommended for use wherever heat is indicated as a therapeutic agent for local applications. According to the firm, this lamp is similar to the Model B Lamp previously accepted by the Council (THE JOURNAL, June 16, 1934, p. 2023) as a source of thermogenic radiation. The unit under consideration is equipped to operate with an infra-red nonluminous element or incandescent filament bulb which may be used interchangeably with the aid of a lamp adapter. A lamp may be procured which employs only the infra-red nonluminous element.

It is possible to secure a lamp which operates at the nearest actual socket voltage. Where the infra-red unit alone is desired, the lamp may be obtained with either a 660 watt, 115 volt infra-red element or an 880 watt, 230 volt element. For double use, incandescent lamps with adapters are available utilizing 250 watts for operation at from 110 to 130 volts or from 220 to 250 volts.

A telescope stand allows the head to be raised to a height of 66 inches or lowered to 33 inches. In order to facilitate focusing, there is a convenient handle on the reflector head. This reflector is designed to give uniform heat radiation, without "hot spots," and is an integral part of the floor stand. As a safety precaution, wire mesh completely covers the front of the reflector. The shipping weight of the unit is 27 pounds; when uncased, 19 pounds.

The unit was tried out in a clinic acceptable to the Council and found to give satisfactory service.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Model C Thermospectral Lamp for inclusion in its list of accepted apparatus.

**Council on Foods****ACCEPTED FOODS**

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

AMERICAN TABLE BRAND GOLDEN SYRUP

Manufacturer.—American Syrup & Preserving Company, Nashville, Tenn.

Description.—A table syrup; corn syrup and refiners' syrup.

Manufacture.—A mixture of refiners' syrup and water is boiled, corn syrup is added, the mixture is blended and heated. Various size containers are automatically filled.

Analysis (submitted by manufacturer).—Moisture 24.1%, total solids 75.9%, ash 0.8%, sodium chloride 0.4%, fat (ether extract) none, protein ($N \times 6.25$) 0.1%, reducing sugars before inversion, as dextrose 31.1%, reducing sugars after inversion 35.9%, sucrose 4.7, dextrins (by difference) 39.1%, crude fiber none, carbohydrates other than crude fiber (by difference) 75.0%.

Calories.—3.10 per gram; 88 per ounce.

**NUTRADIET BRAND BLACKBERRIES
PACKED IN JUICE**

Distributor.—The Nutradiet Company, a subsidiary of S & W Fine Foods, Inc., San Francisco.

Description.—Canned blackberries packed in juice without added sugar.

Manufacture.—Vine-ripened blackberries, from vines on which no spray is used after the blossoms appear, are inspected, washed, graded and mechanically packed into cans; berry juice is added

and the contents of the cans are heated to 85 C. for ten minutes. The cans are automatically sealed and processed.

Analysis (submitted by manufacturer).—Moisture 86.4%, total solids 13.6%, ash 0.3%, fat (ether extract) 0.5%, protein ($N \times 6.25$) 0.9%, crude fiber 2.1%, carbohydrates other than crude fiber (by difference) 9.3%, titratable acidity as citric acid 0.5%.

Calories.—0.45 per gram; 13 per ounce.

Claims of Manufacturer.—For diets in which sweetened fruit is proscribed.

**MRS. PALEY'S BABY FOOD—
STRAINED CEREAL**

Manufacturer.—Paley-Sachs Food Company, Houston, Texas.

Description.—Canned sieved mixture of oats, cracked wheat, farina, yellow corn meal and wheat germ, cooked in milk.

Manufacture.—The prepared cereals in formula proportions are added to definite amounts of hot milk and cooked. The cooked cereal is then sieved, filled into glass jars, vacuum sealed and heat processed.

Analysis (submitted by manufacturer).—Moisture 74.2%, total solids 25.8%, ash 0.7%, fat (ether extract) 1.1%, protein ($N \times 6.25$) 4.3%, crude fiber 0.2%, carbohydrates other than crude fiber (by difference) 19.5%, iron (Fe) 0.0011%, phosphorus (P) 0.060%, calcium (Ca) 0.065%.

Calories.—1.1 per gram; 31 per ounce.

FLORIDA'S FINEST ORANGE JUICE

Distributor.—Sun-Gold Orange Juice Company, Detroit (for state of Michigan); also Garland C. Norris, Inc., Raleigh, N. C.

Manufacturer.—Floriorange Cannery, Inc., Mount Dora, Fla.

Manufacture.—Tree-ripened Florida oranges are washed and automatically halved and reamed. The juice is skimmed to remove any seeds, coarse pulp and free oil, pasteurized and automatically filled into cans, sealed, heat processed and cooled.

Analysis (submitted by manufacturer).—Moisture 83.5%, total solids 16.5%, ash 0.8%, fat (ether extraction method) 0.1%, protein ($N \times 6.25$) 0.4%, reducing sugars (as invert sugar) 6.7%, sucrose 8.3%, crude fiber 0.2%, carbohydrates other than crude fiber (by difference) 15.0%, titratable acidity as citric acid 0.81%, vitamin C (titration) 54 mg. per 100 cc. (1,080 international units).

Calories.—0.6 per gram; 17 per ounce. Sugar is added before pasteurization in varying quantities to produce standard uniform sweetness. The average sugar addition amounts to about 2 per cent by volume.

Vitamins.—Contains 1,080 international units of vitamin C per hundred cubic centimeters.

**GOLD MEDAL CORN MEAL (FROM
WHITE CORN)****GOLD MEDAL CORN MEAL (FROM
YELLOW CORN)****GOLD MEDAL CREAM MEAL (FROM
WHITE CORN)****GOLD MEDAL CREAM MEAL (FROM
YELLOW CORN)**

Manufacturer.—General Mills, Inc., Minneapolis.

Description.—Corn meal practically free from germ and corn bran. The "Cream Meal" is of finer granulation than the "Corn Meal."

Manufacture.—Corn kernels are subjected to thorough cleansing and tempering followed by grinding and sifting to the proper granulation. The germ is removed in the milling process. No bleach or artificial color is used.

Analysis (submitted by manufacturer).—Moisture 12.0 to 13.5%, ash 0.3 to 0.5%, fat (ether extract) 0.5 to 0.9%, protein ($N \times 6.25$) 8.3 to 9.3%, crude fiber 0.4 to 0.7%, carbohydrate other than crude fiber (by difference) 78.5 to 75.1%.

Calories.—3.5 per gram; 99 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address "Medic, Chicago"

Subscription price Seven dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, JULY 30, 1938

THE NATIONAL HEALTH CONFERENCE

In August 1935, following the passage of the Social Security Act, the President appointed the Interdepartmental Committee to Coordinate Health and Welfare Activities "in order that the full benefits of the varied federal program under the act's provisions might reach with minimum delay and maximum effectiveness the individual men, women and children for whose aid and service the program was brought into existence." Late in May of this year it was announced that a conference would be called in Washington by Miss Josephine Roche, chairman of the Interdepartmental Committee, to consider a national health program developed by the Technical Committee on Medical Care. With the approval of the Board of Trustees, Dr. Olin West, Secretary of the American Medical Association, invited Miss Roche to appear before the House of Delegates of the American Medical Association at the San Francisco session to present a statement regarding the proposed national health conference. Miss Roche found it impossible to attend but sent a message, which was read to the House of Delegates by Dr. Warren F. Draper of the United States Public Health Service. The statement by Miss Josephine Roche (*THE JOURNAL* July 2, page 52) should now be read again to obtain the background of the present situation. This statement makes it clear that the Technical Committee on Medical Care has based a comprehensive health program largely on the National Health Survey made by the United States Public Health Service, a study made about a year ago covering 800,000 families, including 2,800,000 people. This study was epitomized in a report¹ entitled "The Need for a National Health Program," which was transmitted to the President in February 1938.

In her message to the House of Delegates, Miss Roche pointed out that the calling of the national health conference was at the suggestion of President Roosevelt, who urged the Interdepartmental Committee to invite

representatives of the interested public and of the medical and other professions to examine the health problems in all their major aspects and to discuss ways and means of dealing with these problems. Miss Roche also pointed out that the size of the conference would be limited to permit frank discussion but that it was hoped that it would be truly representative of both the professional groups who have the technical knowledge and of the general public which is vitally interested in the distribution and application of this knowledge. The conference was expected to contribute to two ends: first, a better understanding of the national needs in the field of health and medical care; second, the formulation of policies which would enable the medical and other professions, private organizations, federal, state and local agencies and individual citizens to cooperate in efforts to meet these needs. It was said, however, that the national health conference would not take formal action on any part of the report and that it was hoped that none of the groups or individuals participating in the conference would attempt to make premature judgments or urge others to do so.

In an early issue of *THE JOURNAL* a complete abstract of the national health conference will be presented, indicating the nature of the attendance and the character of the addresses that were made. Until the verbatim report becomes available, it is impossible to present a satisfactory abstract. Nevertheless, it is important that the medical profession begin thinking immediately in terms of the proposed national health program and formulate its own point of view. For this reason, the complete text of the national health program is presented in this issue of *THE JOURNAL*, page 432.

The newspapers have reflected to some extent the attitude of those who were in attendance at this conference. A better understanding of this attitude becomes available only when there is a thorough comprehension of the affiliations of those who participated in the conference. The group included physicians and representatives of correlated professions, representatives of labor organizations, of mutual aid and welfare organizations and of farm bureaus and federations, editors chiefly of liberal or radical periodicals, leading workers in the field of the hospital and of hospital insurance organizations and government employees. The physicians who were in attendance fall into several groups, including approximately ten who are members of various bodies of the American Medical Association, four from the "Committee of 430," two from the National Medical Association and several industrial physicians of leading corporations; there were also one representative of the American Osteopathic Association and one representative of the optometric association. Immediately obvious was the absence in the group of any real representation from what might be called industrial or financial leadership or what is usually characterized as "capital."

1. A National Health Program and Some Proposals Toward Its Design, J. A. M. A. 110: 656 (Feb. 26) 1938.

The program opened with introductory addresses by Miss Roche, Miss Lenroot and Surgeon General Par-ran. The afternoon session was devoted to prepared addresses by representatives of medical and welfare groups, the concluding address being that of Dr. Hugh Cabot. His statements and his method of presentation were bitter and derogatory to the efforts of the medical profession, leading the audience into an emotional upheaval against the American Medical Association. It should be remembered that feelings run high in Washington at this time because of the daily dramatization of the conflict between the Group Health Assn., Inc., and the District of Columbia Medical Society. Several of those in attendance at the conference responded to the address. This conflict, rather than the prime purpose of the conference, was featured in reports of the conference in the press on the following day.

The entire second day of the conference was devoted to a presentation of the proposed program with subsequent discussion. This discussion was somewhat directed through selection of representatives who had prepared discussions before coming to the conference. The time for general discussion was naturally, therefore, somewhat limited. The final sessions of the third day were again devoted largely to prepared discussions, some of them previously arranged and some presented on the request of those who made them; the general discussion during the entire conference was limited to a few hours.

The summary of the National Health Program indicates that the technical committee has made five recommendations, based on its consideration of the health needs of the nation. The first recommendation calls for an expansion of public health and maternal and child health services. This will necessitate an additional annual expenditure by federal, state and local governments of \$200,000,000, the chief purpose being the strengthening of public health organization; the reduction of tuberculosis, venereal diseases and malaria; control of mortality from pneumonia and from cancer; mental hygiene, and industrial hygiene. It is recommended that one half of these increased funds be provided by the federal government. For the expansion of maternal and child health service, which is to include the provision of medical and nursing care of mothers and newborn infants, medical care of children, services for crippled children, consultation services of specialists and postgraduate training, the committee recommends an expanding program with an additional annual expenditure of \$165,000,000, of which the federal government is expected to provide one half. These services are to be provided to people of all income groups in all parts of the United States.

The second, third and fourth recommendations include expansion of medical services and facilities with special emphasis on new diagnostic and therapeutic services. The technical committee finds that hospitals are playing

an increasing part in health and sickness services, that hospital accommodations are poorly adapted to the varying needs of people, that general hospital beds are empty much of the time, and that there are too few low-cost or free beds to satisfy the needs. The committee insists that there are 1,300 counties without registered general hospitals. It therefore recommended a ten year program providing for the expansion of the nation's hospital facilities by 360,000 beds and the construction of 500 health and diagnostic centers in areas inaccessible to hospitals. It asks also increased financial assistance for these new hospitals or units during their first three years of operation. The annual cost of this program is to be \$146,500,000, of which the federal government is expected to pay one half.

To provide medical care for the medically needy, the committee recommends that the federal government make grants in aid to the states with a program which is expected to cost \$400,000,000 annually, the federal government paying one half.

The fourth recommendation requests consideration of a program for raising money by general taxation and special tax assessments and by special insurance contributions to provide medical care for every one. In this program it is suggested that the role of the federal government should be principally to give financial and technical aid to the states in providing sound programs through procedures largely of their own choice.

The fifth recommendation concerns loss of wages during sickness. For this a disability compensation program was urged along lines analogous to unemployment compensation.

The program covering recommendations I, II and III calls for a total annual expenditure of \$850,000,000. Recommendations IV and V are not included in this program, since they involve setting up insurance schemes which would reach tremendous figures. The complete report of the National Health Conference gives the details involved in these recommendations. Attention should be called particularly, however, to page 452 with the heading "Development of Health Insurance by the States." Here it is recommended that a health insurance system might be limited to individuals under a specified income level, for example \$3,000 a year, or might cover all persons in specified employment groups, but the committee definitely recommends a comprehensive system of health insurance covering the entire population. For this purpose it is estimated that the cost will involve from 4 to 4.5 per cent of the income of the covered population. It is felt, however, that it is the task of the federal government to assist the states in the development of sound programs, either for the development of public medical services of health insurance or a combination of the two. The committee points out that the cost to the federal government of a program developed under this recommendation cannot be estimated until the essential features are determined. However, the over-all cost of services to be furnished

through health insurance or analogous public health services is estimated to be about \$2,600,000,000 a year.

Conspicuous in the reaction of the attendants on the National Health Conference to this program was the attitude of various special groups. The medical profession pleaded careful consideration and action in embarking on a program of such magnitude. Representatives of the American Medical Association were unanimous in pointing out to the conference that those in attendance could not undertake to decide the attitude or policies of the American Medical Association toward the program as a whole and that it would be necessary to refer the entire program to the House of Delegates of the American Medical Association before offering the response of the medical profession to the program. Representatives of one of the leading organizations in the field of labor—the Committee on Industrial Organization—had opportunity to confer during the conference; one of their speakers indicated that this body was in favor of the program as presented but would not tolerate any deductions from the wages of the worker in order to meet the cost of such a program. Representatives of the American Federation of Labor, however, were inclined to accept the entire program and felt that labor as represented by them would be willing to permit almost any reasonable deduction from wages in order to provide the funds necessary for this purpose.

As might have been expected, speakers for all sorts of relief, welfare, social service, farming and similar groups were enthusiastic in their endorsement of the proposed program. The common conception seemed to be that it was not the concern of those in attendance at the conference how much money might be required or where the funds might be developed or how funds might be secured. Rather it was their concern to recognize the needs which were said to exist and to develop a program for meeting these needs. Since, however, no other group had been called on to develop its own program and to present such a program at the conference, the entire time being limited to a consideration of the program developed by the Technical Committee, alternatives or other possibilities were not discussed.

Notwithstanding that the Committee of 430 had repeatedly declared its opposition to compulsory sickness insurance in communications addressed to the American medical profession, not one of the representatives of this group spoke in opposition to this feature of the government program.

The conference did not pass any resolutions; it did not formally accept the program or indicate definite lines of further action. In her concluding statement to the conference, Miss Josephine Roche indicated that the next step would no doubt be a series of smaller conferences for the formulation of legislation by which the recommendations of the Technical Committee embodied in the national health program could be submitted to the Congress of the United States for consideration and

action. Presumably in such consideration the Congress of the United States would be much more concerned than was the conference in the technic of raising the money for the fulfilment of the program and also with integration of this program into the national economy. The medical profession may derive some measure of assurance from the fact that Mr. Arthur J. Altmeyer, chairman of the Social Security Board, indicated, following the address by Dr. Olin West, Secretary of the American Medical Association, that opportunity would be given to the American Medical Association "to compare recipes with those of the government before anything is put into the oven."

In one of the concluding addresses, which paved the way for the final statement by Miss Roche, Edwin E. Witte, professor of economics in the University of Wisconsin, who has long been adviser to various groups of the government concerned in the development of this program, called on all those present who were in favor of the program to unite behind it. He said: "We will hear a great deal more than we have about regimenting the medical profession, putting medicine under the control of politicians, the grave dangers of socialized medicine, about this program being un-American and undemocratic." . . . Mr. Witte, like some of the others in attendance at the conference, was inclined to urge greater and greater participation by the federal government and greater federal control in the handling of these matters. He felt that the most important first step was to secure compulsory health insurance legislation in some one state, and he was inclined to urge concentration on the state of Wisconsin for this purpose.

Time did not permit, nor was there adequate opportunity during the conference, to give detailed consideration to the factual data on which the program was developed. With some of these data there may well be serious disagreement. The Bureau of Medical Economics and the Council on Medical Education and Hospitals will no doubt soon make available technical analyses on these points.

If there seemed to be any single proposal on which all those present seemed to be in some agreement, it concerned the demand for a cabinet position on health and medical service under which all the health and medical services of the federal government might be united. As our government is now constituted, appropriations to put into effect various parts of the program will concern separate legislation affecting half a dozen or more federal bureaus. Furthermore, it seemed to be generally agreed that the National Health Conference had served to dramatize certain definite needs which exist at this time and that all must go forward in an endeavor to meet these needs. There was no definite unanimity on the technic of establishing a compulsory sickness insurance program, but unquestionably the majority of the audience selected for attendance on the conference, including particularly all

representatives of labor, relief and welfare organizations, were in favor of this procedure.

The medical profession faces a situation unique in its history. The House of Delegates will no doubt give careful, calm consideration to the problems concerned. When decision has been made by the House of Delegates, the medical profession must be ready for firm and united action in behalf of that decision. Perhaps there are small groups within the medical profession, as represented at the conference, who are willing to accept in toto the National Health Program as submitted by the Technical Committee on Medical Care. These little groups represent an infinitesimal portion of the 110,000 physicians who constitute the membership of the American Medical Association. When the decision of the House of Delegates is made, individual members of the American Medical Association must carry the responsibility for making that decision and planned action effective. In the meantime, representatives of the Association may well abide by the fundamental principles and policies already established by the House of Delegates. These principles and policies do not forbid, nor do they seem to contemplate any opposition to, a well considered expanded program of medical service, particularly preventive medical service, when the need can be established. Neither is there any fundamental principle or policy which in any manner opposes aid to the indigent or even to what are called the medically indigent if their medical indigence can be established, provided such aid comes through agencies which will not tend to lower the quality or standards of medical care.

FEDERAL SUBSIDIES FOR FREE TREATMENT OF VENEREAL DISEASE PATIENTS

For the investigation and control of gonorrhea, syphilis and other venereal diseases the Seventy-Fifth Congress appropriated \$3,000,000, to be expended during the fiscal year ending June 30, 1939. Larger appropriations for subsequent years were authorized and will presumably be appropriated as a matter of routine by subsequent congresses. Regulations for the distribution by the United States Public Health Service of the initial appropriation have just been made public.¹

In order to obtain its allotment from the federal fund, a state must submit plans and budgets to the United States Public Health Service for approval. As suggestive of what will be approved now, the regulations promulgated July 14 specify what state plans must provide on and after Jan. 1, 1940. After that date, such plans must provide free diagnostic and treatment facilities for the diagnosis and "emergency treatment" of any patient who applies and for any patient referred by a private physician either for continued treatment or for consultative advice and opinion. Presumably such diagnosis and treatment must have some relation

to venereal diseases, although the regulations do not so specify. There is no requirement that patients in either of the two classes named above be financially unable to obtain from private physicians the needed medical care. As a matter of fact the regulations apparently contemplate that at least some such patients will be financially able to secure for themselves the services of physicians, for the regulations specifically provide that a third class of patients shall be given treatment without cost, namely, those "unable to afford private medical care," who may apply for treatment on their own initiative and without an emergency or the intervention of a physician. Thus apparently a person who is able financially to supply himself with all the necessities and luxuries of life may yet obtain free treatment at the expense of taxpayers if he is referred to a federal-state clinic by a private physician or may, without being referred, receive "emergency treatment," whatever that term may mean in this connection. Such diagnostic and treatment services must be made as freely available to nonresident persons as to people who reside in the governmental unit providing the services.

Antisyphilitic drugs will be distributed, without cost, to any physician who requests them for the treatment of patients. If a state health department has established the policy of furnishing drugs to physicians on the condition that the physicians submit morbidity reports on the cases of syphilis to be treated, the retention of that policy is contemplated by the new federal regulations. Any state or local laboratory which receives federal aid must demonstrate by a "suitable method" that the tests for syphilis performed therein have a satisfactory sensitivity and specificity rating, to be determined, in the case of a state laboratory, by the United States Public Health Service. The services of a properly qualified full-time venereal disease control officer must be provided in each state and in any municipality receiving federal funds for the control of venereal diseases if the population of either the state or the municipality exceeds 500,000. A state health officer, however, may after consultation and agreement with the Surgeon General of the Public Health Service apply this requirement to cities having a population of less than 500,000. Health departments may budget for the training of personnel, for a period not to exceed one year for any individual, such sums as may be approved by the Surgeon General, who also will determine the amount that may be paid to trainees for living stipends, tuition and traveling expenses.

Allotments amounting to 24 per cent of the \$3,000,000 appropriation will be made to the states in the ratio which the population of each state bears to the population of the United States. Thirty-two per cent of the federal fund will be allotted on the basis of the extent of the venereal disease problem. Twenty-four per cent will be distributed on the basis of the financial needs of the states "as determined by the ability of the state to raise revenue expressed indirectly in terms of per

1. Federal Register 3: 1828 (July 22) 1938.

capita income." The remaining 20 per cent will be utilized by the Public Health Service. Allotments to the states will be available for payment when matched by state or local public funds appropriated and expended for venereal disease control as follows: (1) For the fiscal year ending June 30, 1939, only the allotment made on the basis of population must be matched; (2) for the fiscal year ending June 30, 1940, and each fiscal year thereafter, allotments based on the extent of the venereal disease problem, as well as those based on population, must be matched.

The federal regulations conclude by providing that, in allocating funds for local venereal disease control services, a state health officer shall give due consideration to the relatively higher prevalence of syphilis in urban areas.

VENEREAL DISEASE CONTROL IN SCANDINAVIAN COUNTRIES AND THE NETHERLANDS

Under the auspices of the Ministry of Health¹ a distinguished group of British health officials has recently studied the effectiveness of antivenereal measures in Denmark, Norway, Sweden and the Netherlands. The first three countries provide for notification and compulsory treatment of infected persons; the Netherlands has neither notification nor compulsory treatment and therefore serves as a control. In Denmark the first regulations dealing with venereal disease were issued in 1788 but were applied at first to only a limited part of the country. These regulations, although framed a century and a half ago, incorporate two of the guiding principles which still form the basis of the Danish system, namely free treatment and compulsory treatment. The regulations were revised at intervals until 1906, at which time previous laws were replaced by "The Law to Combat Professional Immorality and Venereal Contagion." This law apparently was designed primarily to check immoral practices but continued the provisions regarding free and compulsory treatment. By far the larger proportion of patients with venereal disease are said to avail themselves of facilities provided for free treatment. Punishment and policing are provided for those who refuse or absent themselves from treatment. Punishment is provided also for knowing exposure of others to risk of infection. A 1935 analysis of the incidence of syphilis from the blood tests made by the State Serum Institute resulted in a calculation that the fresh infections in Denmark in 1919 were 4,500 and by 1933 had fallen to 700. The number of new cases reported to the health department in 1919 totaled 4,307 and in 1933 only 653. Significant also were the results of blood examinations of patients in the maternity wards at the State Hospital in Copenhagen. In 1935 only twenty-two of 1,435 gravid women in that hospital gave a positive Wassermann

reaction. With gonorrhea, however, although a definite decline in incidence was evident in Copenhagen, the rate for the whole country in 1936 was still too high, especially in view of the fact that there are only two towns in Denmark with a population of more than 100,000 inhabitants.

The present Swedish act came into effect Jan. 1, 1919, and provided compulsory medical treatment and free treatment to all irrespective of financial status. It provided also for the reporting of venereal diseases, punishment of exposure of others, proof of noninfectivity before marriage, and punishment for treatment of venereal disease by others than qualified practitioners of medicine. Although the law permitted the forcible treatment of patients suffering from venereal disease, the committee could find no record of any such case having occurred and persuasion seems to have been practiced successfully. Since in Sweden the sources of infection are stated, the amount of imported disease may be estimated. Of the 11,804 cases of primary and secondary syphilis in males in the period 1915-1919, infection is stated to have occurred abroad in 1,042, or 8.8 per cent. A similar statistical study from 1930 to 1934 showed 31.7 per cent infections abroad, 820 of a group of 2,507. Except for the war years, the decline in all forms of syphilis has been practically uniform. For gonorrhea, however, in Stockholm the rate rose to 203.7 for 10,000 in 1918 and declined rapidly to less than half this figure by 1922. It remained more or less stationary until 1930, when it dropped rapidly to 65 in 1935, a figure which, although still high, was less than one third of that in 1918. The trend of incidence in the rest of the country was roughly similar.

Norway differs from Denmark and Sweden in that the measures for the control of venereal diseases are carried out not under any special "venereal law" relating solely to those diseases but under the provisions of the law relating to infectious and contagious diseases generally. Furthermore the Norwegian system does not provide for free treatment for all sections of the community, and persons suspected of being infectious cannot be forced to undergo examination and treatment. However, if the suspicion of infectiousness is sufficiently strong the person concerned may be isolated in a hospital or elsewhere to prevent the spread of infection. The best available figures on the incidence of syphilis in Oslo showed a remarkable drop from a peak of 36.2 for 10,000 to 3.4 in 1934. This, however, was followed by a rise in 1935 and 1936. For the rest of Norway the decline has been more steady although less sensational. Although the national rate of 19.7 for gonorrhea in 1934 was appreciably lower than that rate of 27.1 in the peak year of 1928, it must still be regarded as high for a country so sparsely populated. In the Netherlands the treatment of venereal diseases depends largely on voluntary effort. Although neither state nor municipalities have undertaken to give free treatment, there appear to be adequate provisions for

1. Harrison, L. W.; Ward, D. C. L.; Ferguson, T., and Rorke, Margaret: Report on Antivenereal Measures in Certain Scandinavian Countries and Holland, Ministry of Health, London, H. M. Stationery Office, 1938.

treatment at least in the principal towns. In the Netherlands the Social Workers Department is considered as an advisory bureau and all patients after diagnosis has been made and treatment prescribed are encouraged to visit it. The aims of the social worker are to see that the patient carries out the prescribed treatment, to discover and bring under treatment the source of the infection, and to prevent the spread of the patient's infection to others. The best available figures on the incidence of syphilis in the Netherlands indicate a rate of 1.06, which is more than the Swedish rate (0.67) and lower than that calculated for Denmark (1.6). The fact that the rate should be lower than that in Denmark is remarkable especially when it is remembered that the density of population in the Netherlands is three times as great and the volume of shipping and river traffic with other countries is much greater, both of which factors make for the spread of venereal diseases. With regard to gonorrhea, although the sources of error are many, the rate appears to be less than one-third that in Sweden so that the conclusion that the actual incidence of disease in the Netherlands is not higher than in other countries can be tentatively accepted.

In general the compulsory regulations to undergo treatment in these countries do not meet with serious objection and the authorities can rely in the main on the cooperation of the public. The report draws attention however to several factors which make for the smooth working of the arrangements. Each country is inhabited by a small homogeneous race with a high degree of uniformity in social customs and outlook; the sense of responsibility is highly developed and there is a general respect for obedience to authority; the people in general are health conscious; cooperation between doctor and patient is easily established; the standard and uniformity of medical education and practice is high; the system of medical organization in each of these countries is such that a large proportion of the medical profession are state or municipal servants at least on a part time basis, and finally infection with a venereal disease apparently does not create in most patients the same impulse to concealment that is customary in Great Britain. In all three of the Scandinavian countries, treatment of venereal disease by unqualified persons is an offense against the law; infringements of the law are rare. From a consideration of the trend and present levels of the incidence rates of syphilis in the countries dealt with in the report and the known status of Great Britain, it seems clear that factors other than the administrative procedure in force in the latter countries influence the recorded prevalence of the disease. All the countries, however, whether employing compulsion or not, have been relatively unsuccessful in effecting a reduction in the incidence of gonorrhea. The report concludes that compulsory treatment does not seem to be a major factor influencing the results of the antivenereal measures in the countries in which it is employed.

Current Comment

TYPHOID FEVER IN THE UNITED STATES

Elsewhere in this issue (page 414) appears the twenty-sixth annual review of typhoid in the large cities of the United States. As in previous reports, data have been assembled from ninety-three cities. Most of the regions reported show a continued reduction in the annual rate of typhoid, and the number of cities without deaths from typhoid during the calendar year increased from eighteen in 1936 to twenty-seven in 1937. Only 280 deaths occurred from typhoid in 1937 in the seventy-eight cities for which complete data are available since 1910, the lowest rate ever recorded. While there were a few small outbreaks of the disease, this statistical study continues to show the downward trend in the death rate from typhoid in the large cities of the United States. A comparison of the figures available for 1937 with those published in the first report in 1913 are gratifying to health officials and to the medical profession.

VITAMIN C EXCRETION IN CHILDREN

Keith and Hickmans¹ recently observed the excretion of vitamin C in normal children and children with various diseases, especially rheumatic fever. The vitamin C in the urine was estimated quantitatively by the method of Harris. The diet provided was that usually given in the hospital and supplied a daily intake of approximately 4 mg. of ascorbic acid. This quantity of vitamin C was kept as constant as possible during the period of investigation. Thirty-nine children who were admitted to the medical and surgical wards with little or no evidence of active infection were chosen as the control group. The average daily output of vitamin C in the urine was found to be 9.7 mg. Eighteen of these patients were given daily test doses of 500 mg. of ascorbic acid and the amount appearing in the urine was estimated; 61 per cent excreted 50 mg. or more following the first dose and the remainder required two or three doses to obtain this response in the urine. Wide individual variations were noted. Eighteen children with acute rheumatic fever were found to excrete an average daily amount of vitamin C of 21.5 mg., whereas thirty-one convalescent rheumatic fever patients excreted only 12.4 mg. on the average. Saturation tests revealed a slight deficiency in the stores of vitamin C in active rheumatic fever patients as compared with convalescent rheumatic fever patients or controls. It was found that the administration of sodium salicylate 3.25 Gm. and sodium bicarbonate 6.5 Gm. increased the excretion of vitamin C in the urine. Artificially induced fever by the use of typhoid vaccine also produced a slight increase in vitamin C excretion. No direct evidence, it was concluded, was found to support the theory that rheumatic fever is a manifestation of vitamin C deficiency associated with an infection.

1. Keith, J. D., and Hickmans, Evelyn M.: Vitamin C Excretion in Children, with Particular Reference to Rheumatic Fever, *Arch. Dis. Child.* **12**: 125 (June) 1938.

NATIONAL HEALTH CONFERENCE

CALLED BY THE INTERDEPARTMENTAL COMMITTEE TO COORDINATE HEALTH AND WELFARE ACTIVITIES—WASHINGTON, D. C., JULY 18-20, 1938

The Interdepartmental Committee was appointed by the President in August 1935, following the passage of the Social Security Act, in order that the full benefits of the varied federal program under the act's provisions might reach with minimum delay and maximum effectiveness the individual men, women and children for whose aid and service the program was brought into coexistence.

COMMITTEE

Josephine Roche, *Chairman* E. L. Bishop, *Executive Secretary*
Arthur J. Altmeyer, *Chairman, Social Security Board*
Oscar L. Chapman, *Assistant Secretary of the Interior*
Charles V. McLaughlin, *Assistant Secretary of Labor*
Milburn L. Wilson, *Under Secretary of Agriculture*

TECHNICAL COMMITTEE ON MEDICAL CARE

Martha Eliot, *Children's Bureau*
I. S. Falk, *Social Security Board*
Joseph W. Mountin, *Public Health Service*
George St. John Perrott, *Public Health Service*
Clifford W. Waller, *Public Health Service*

A NATIONAL HEALTH PROGRAM

A SUMMARY

of the program recommended by the Technical Committee on Medical Care to the Interdepartmental Committee to Coordinate Health and Welfare Activities and presented to the President Feb. 14, 1938

The Technical Committee's study of health and medical services in the United States indicates that deficiencies in the present health services fall into four broad categories.

1. Preventive health services for the nation as a whole are grossly insufficient.
2. Hospital and other institutional facilities are inadequate in many communities, especially in rural areas, and financial support for hospital care and for professional services in hospitals is both insufficient and precarious, especially for services to people who cannot pay the costs of the care they need.
3. One third of the population, including persons with or without income, is receiving inadequate or no medical service.
4. An even larger fraction of the population suffers from economic burdens created by illness.

The Committee submits a program of five recommendations for meeting with reasonable adequacy existing deficiencies in the nation's health services. Estimates of the total additional annual costs to federal, state and local governments of recommendations I, II and III are also submitted. The Committee does not suggest that it is practicable to put into effect immediately the maximum recommendations. It contemplates a gradual expansion along well planned lines with a view to achieving operation on a full scale within ten years. Except so far as they overlap and include portions of the first three recommendations, recommendations IV and V involve chiefly a revision of present methods of making certain expenditures, rather than an increase in these expenditures.

RECOMMENDATION I: EXPANSION OF PUBLIC HEALTH AND MATERNAL AND CHILD HEALTH SERVICES

The Committee recommends the expansion of existing cooperative programs under title VI (Public Health Services) and title V (Maternal and Child Health Services) of the Social Security Act.

A. Expansion of General Public Health Services (Title VI): Fundamental to an expanding program of preventive health services is the strengthening and extension of organized public health services in the states and in local communities. It is recommended that federal participation in the existing cooperative program should be increased with a view toward equalizing

the provision of general public health services throughout the nation. The Committee further recommends that increasing federal participation be utilized to promote a frontal attack on certain important causes of sickness and death for the control of which public health possesses effective weapons.

The Committee tentatively estimates that, at its peak, an adequate program of expanded public health service would require additional annual expenditures by federal, state and local governments of \$200,000,000 for these purposes: strengthening of public health organization; the eradication of tuberculosis, venereal diseases and malaria; the control of mortality from pneumonia and from cancer; mental hygiene and industrial hygiene. The Committee recommends that approximately one half of these increased funds be provided by the federal government.

B. Expansion of Maternal and Child Health Services (Title V): Included in this part of the recommended program are provisions for medical and nursing care of mothers and their newborn infants, medical care of children, services for crippled children, consultation services of specialists and more adequate provisions for the postgraduate training of professional personnel. The objective sought in this phase of the Committee's proposed program is to make available to mothers and children of all income groups and in all parts of the United States minimum medical services essential for the reduction of our needlessly high maternal mortality rates and death rates among newborn infants, and for the prevention in childhood of diseases and conditions leading to serious disabilities in later years.

The Committee recommends a gradually expanding program reaching at least by the tenth year a total additional expenditure of \$165,000,000, distributed as follows:

Maternity care and care of newborn infants.....	\$95,000,000
Medical care of children	60,000,000
Services for crippled children.....	10,000,000

The Committee recommends that approximately one half of the cost of the expanded program should be met by the federal government.

RECOMMENDATIONS II, III AND IV: EXPANSION OF MEDICAL SERVICES AND FACILITIES

The Committee has also explored the adequacy of services for the sick, the sickness experience of and the receipt of professional and hospital services by broad groups of the population. The Committee finds that the needs for diagnostic and therapeutic services to individuals are greatly in excess of such accomplishments as might be effected by a strengthened program of preventive services—important as such services may be as a first step. Indeed, it has been recognized in recommendation I that certain important causes of sickness and death require for their eradication or control the application of diagnostic and therapeutic procedures through services to individuals in need of such care.

The Committee finds that current practices in the provision of medical services and facilities fall far short of meeting these needs. It has taken account of personnel and facilities, financial support of services required by persons who are themselves unable to pay for the care they need, the sickness burdens of self-supporting persons, methods of paying for medical care and of assuring income for workers who are disabled by sickness. It finds that these needs warrant an expansion of medical services and facilities on a broader front than that contemplated in recommendation I alone.

RECOMMENDATION II: EXPANSION OF HOSPITAL FACILITIES

The Technical Committee has made a special study of deficiencies in existing hospital and other institutional facilities. It is impressed with the increasing part which hospitals play, year after year, in the health and sickness services. Without adequate hospitals and clinics, it is impossible to provide many of the important services which modern medicine can furnish.

The Committee finds hospital accommodations and hospital organization throughout the country ill adapted to the varying needs of people living under different social, economic and geographic circumstances. In hospitals offering general care, the percentage of beds supported by patients' fees is out of proportion to the ability of the population served to pay; hence many general hospital beds are empty a large part of the time. Conversely, there are too few low-cost or free beds to satisfy the needs. By far the greater majority of these are found in our large metropolitan centers. There are wide areas—some 1,300 counties—having no registered general hospitals; others are served only by one or two small proprietary institutions. Only in large city hospitals have outpatient clinics been developed to any considerable extent; governmental tuberculosis sanatoriums and mental institutions tend to be overcrowded or are otherwise restricted in funds or personnel for rendering the community service which they should be equipped to give.

The Committee recommends a ten year program providing for the expansion of the nation's hospital facilities by the provision of 360,000 beds—in general, tuberculosis and mental hospitals, in rural and in urban areas—and by the construction of 500 health and diagnostic centers in areas inaccessible to hospitals. These new hospitals or units would require financial assistance during the first three years of operation. Special federal aid for this purpose is suggested.

Averaged over a ten year period, the total annual cost of such a program, including special three year grants for maintenance of new institutions is estimated at \$146,050,000 divided as follows:

	Construction	3 Year Maintenance
General and special	\$ 63,000,000	\$21,600,000
Tuberculosis	15,000,000	6,000,000
Mental	32,500,000	7,800,000
Diagnostic centers	150,000	.....
Total average annual cost.....	\$110,650,000	\$35,400,000

The Committee recommends that approximately one half of this total annual cost be met by the federal government. It points out that a hospital construction program should not be undertaken unless there is a concurrent program to give continuing aid toward the cost of free services such as is included in recommendation III.

RECOMMENDATION III. MEDICAL CARE FOR THE MEDICALLY NEEDY

The Committee is impressed with the evidence now available that one third of the population which is in the lower income levels is receiving inadequate general medical services. This applies to persons without income and supported by general relief and to those being supported through old-age assistance, aid for dependent children, or work relief, and also to families with small incomes. These people are doubly handicapped. They have higher rates of sickness and disablement than prevail among groups with larger incomes, and they have lesser capacities to buy and pay for the services they need. Current provisions to assist these people—though generously given in many state and local governments, by voluntary organizations, and by professional practitioners—are not equal to meet the need.

The Committee recommends that the federal government, through grants-in-aid to the states, implement the provision of public medical care to two broad groups of the population: (1) to those for whom local, state or federal governments, jointly or singly, have already accepted some responsibility through the public assistance provisions of the Social Security Act, through the work relief programs or through provision of general relief; (2) to those who, though able to obtain food, shelter and clothing from their own resources, are unable to procure necessary medical care. It is estimated that, on the average, \$10 per person annually would be required to meet the minimum needs of these two groups for essential medical services, hospitalization and emergency dentistry. This part of the program might be begun with the expenditure of \$50,000,000 the first year and gradually expanded until it reaches the estimated level of \$400,000,000 which would be needed to provide minimum

care to the medically needy groups. The Committee recommends that one half of the total annual costs be met by the federal government.

RECOMMENDATION IV: A GENERAL PROGRAM OF MEDICAL CARE

The Committee directs attention to the economic burdens created by sickness for self-supporting persons. There is need for measures which will enable people to anticipate and to meet sickness costs on a budget basis.

No conclusion has emerged more regularly from studies on sickness costs than this: The costs of sickness are burdensome more because they fall unexpectedly and unevenly than because they are large in the aggregate for the nation or, on the average, for the individual family. Except in those years when unemployment is widely prevalent, sickness is commonly the leading cause of social and economic insecurity. Without great increase in total national expenditure, the burdens of sickness costs can be greatly reduced through appropriate devices to distribute these costs among groups of people and over periods of time.

The Committee recommends consideration of a comprehensive program designed to increase and improve medical services for the entire population. Such a program would be directed toward closing the gaps in a health program of national scope left in the provisions of recommendations I and III. To finance the program, two sources of funds could be drawn on: (a) general taxation or special tax assessments, and (b) specific insurance contributions from the potential beneficiaries of an insurance system. The Committee recommends consideration of both methods, recognizing that they may be used separately or in combination.

Such a program should preserve a high degree of flexibility, in order to allow for individual initiative and for geographic variations in economic conditions, medical facilities and governmental organization. It should provide continuing and increased incentives to the development and maintenance of high standards of professional preparation and professional service; it should apportion costs and timing of payments so as to reduce the burdens of medical costs and to remove the economic barriers which now militate against the receipt of adequate care.

Planning for a program of medical care of a magnitude to serve the entire population essentially must be approached as an objective to be fully attained only after some years of development. The role of the federal government should be principally that of giving financial and technical aid to the states in their development of sound programs through procedures largely of their own choice.

RECOMMENDATION V: INSURANCE AGAINST LOSS OF WAGES DURING SICKNESS

The Committee recognizes the importance of assuring wage earners continuity of income through periods of disability. A disability compensation program is not necessarily part of a medical care program, but the cost of compensating for disability would be needlessly high if wage earners generally did not receive the medical care necessary to return them to work as soon as possible.

Temporary disability insurance can perhaps be established along lines analogous to unemployment compensation; permanent disability (invalidity) insurance may be developed through the system of old-age insurance.

COSTS OF THE PROPOSED PROGRAM

The maximum annual cost to federal, state and local governments of recommendations I, II and III (with duplications eliminated) is estimated at about \$850,000,000. This figure is the estimated total annual cost at the full level of operation within a ten year period and is presented primarily as a gage of need.

The estimated total includes (1) \$705,000,000—the additional annual expenditures for certain general health services to the entire population and for medical services to limited groups of the population—the public assistance and otherwise medically needy groups—which should be reached within a ten year period, and (2) \$145,000,000—the approximate average annual cost of

hospital construction and special grants-in-aid in the ten year program proposed under recommendation II. It is suggested that the federal share of this amount would be approximately one half.

Recommendation IV is presented primarily as a more economical and effective method of making current expenditures for medical care, though it also makes provision for the medical care of persons who are not now receiving even essential services. An adequate general program of medical care is proposed in the form of alternative arrangements which may cost up to a maximum of \$20 per person a year, i. e. no more than is already being spent through private purchase of medical care. Annual aid from government funds would be necessary to provide services for the care of the medically needy as proposed in recommendation III and for the parts of recommendation I which are included in the broad program set forth in recommendation IV.

The Committee calls attention to the fact that, in some important respects, the five recommendations present alternative choices. However, the Committee is of the opinion that recommendations I and II should be given special emphasis and priority in any consideration of a national health program more limited in scope than that which is outlined in the entire series of recommendations.

The Technical Committee on Medical Care is firm in its conviction that, as progress is made toward the control of various diseases and conditions, as facilities and services commensurate with the high standards of American medical practice are made more generally available, the coming decade, under a national health program, will see a major reduction in needless loss of life and suffering—an increasing prospect of longer years of productive, self-supporting life in our population.

MARTHA ELIOT

Chairman Children's Bureau

I. S. FALK

Social Security Board

JOSEPH W. MOUNTAIN

GEORGE ST. J. PERROTT

CLIFFORD E. WALLER

U. S. Public Health Service.

INTRODUCTORY STATEMENT

A year ago the President's Interdepartmental Committee to Coordinate Health and Welfare Activities charged the Technical Committee on Medical Care to survey the health and medical care work of the United States government.

As the study progressed, two facts became increasingly clear to the Technical Committee: first, that existing services for the conservation of national health are inadequate to secure to the citizens of the United States such health of body and mind as they should have; second, that nothing less than a national, comprehensive health program can lay the basis for action adequate to the nation's need.

These facts were impressed on the Committee from a general review of current health and medical services, from the substantial bodies of information available to various branches of the government, and from recent surveys conducted by governmental and nongovernmental agencies. The Committee records its indebtedness to the numerous groups which have generously supplied information.

In spite of the gains made in the preservation of life during recent years, the utilization of health and medical services has been irregular and uneven. There are serious inadequacies everywhere in the health services of the United States and the deficiencies are acute in many areas and among large groups of the population. Unaided, states and local communities cannot deal with their existing problems. The Technical Committee has therefore submitted recommendations on federal participation in a national health program, giving special consideration to how best and to what extent the federal government may discharge its responsibilities in the field of health conservation, while leaving due and ample place for the work of state and local governments and for voluntary action.

The Technical Committee presents a program containing a series of specific recommendations, five in number. They are presented severally. Some of the recommendations are broader than others; one may include all or part of what is proposed in another. Each recommendation deals with a certain phase of the problem. In some important respects, the five present some alternative choices, especially in respect to the scope of a program to be undertaken. They complement one another and lead all together to an inclusive program of health and medical services to all the people. Action is needed on all the fronts represented in the five recommendations, and as rapidly as resources, personnel and public opinion make possible.

REPORT

of the

TECHNICAL COMMITTEE ON MEDICAL CARE to the NATIONAL HEALTH CONFERENCE

SESSION III

Tuesday Morning, July 19—9:30 a. m.

E. L. Bishop—Chairman

Expansion of General Public Health Services

—Presented by Clifford E. Waller

Public Health Service

Discussion

Expansion of Maternal and Child Health Services

—Presented by Martha Eliot

Children's Bureau

Discussion

EXPANSION OF GENERAL PUBLIC HEALTH SERVICES

PART I. THE NEED FOR EXPANDING PUBLIC HEALTH SERVICES

(1) PUBLIC HEALTH ORGANIZATION

Some recognition of the necessity for protection of the public health is to be found in the legal enactments of all states and in most of their political subdivisions. Unfortunately, the existence of a health department does not always indicate that the community has a complete or adequate health program. For example, less than a third of the counties and even a smaller proportion of the cities employ full-time, professional health officers. The village and township health officer more often than not is some local lay citizen who takes time out from his other work to inspect nuisances or tack up quarantine signs.

States expend through their health departments, on the average, 11 cents per capita, while some state appropriations fall as low as 3 cents. Many local official health organizations have budgets which figure out to be no more than a few cents per capita. Health departments are fairly high on the scale when their annual appropriations reach 50 cents per capita, while the very few organizations, mostly large city health departments, having budgets that approach one dollar per capita are fortunate indeed. With budgets of this low order, health departments are expected to provide service in vital statistics, laboratory diagnosis, communicable disease control, maternal and child hygiene, protection of food supply, environmental hygiene, and to discharge other responsibilities that may be placed on this agency. A preventive program designed to reach any reasonable degree of intensity obviously is out of the question under such limitations.

A start toward remedying this situation was made with the passage of the Social Security Act, title VI, Public Health Work. The relatively small sums of federal money thus far provided have made possible some leveling up in local health organization and some enrichment of health service generally. The impetus toward an expanding public health program created by the federal participation is reflected in the increase

in rural health services during the two and a half years of operation under title VI. At the beginning of the calendar year 1938 there had been a net gain of 623 in the number of counties under full-time health administration over the number reported at the close of 1934. There are now eight states in which all counties are served by full-time health units or districts, as compared with the three so organized at the close of the calendar year 1935. However, it should not be inferred that even in the counties now under full-time health administration the service at present is adequate. Many of the counties are being served by extremely "thin" district health units. Of only a very small number may it be said that the service is even fairly adequate.

The situation in many of our smaller cities, and in some of the larger ones, is almost as bad as that existing in a large part of our rural area. There are numerous urban communities throughout the country in which health activities today are under the direction of part-time physicians engaged in private practice or lay health officers, neither possessing training in modern public health administrative practice. In some of these communities, such health protection as has been afforded has been largely incidental to improvements instituted for economic and esthetic reasons, or to ready access of the population to good medical care, rather than to the activity of the health department. In many of our cities the principal health department activity still consists in the inspection of private premises for nuisances having little bearing on public health, and in an attempt to control communicable diseases by quarantine procedure—a method admitted by leading health workers to be of little avail in reducing the incidence of communicable diseases. More specifically, many of the milk supplies for urban communities are still far from being as safe as they should be, and the unsightly, open-back, insanitary privy still exists in the outlying sections of most of our small cities, with the result that typhoid fever is rapidly becoming more prevalent in towns and small cities than in the rural areas.

The need for federal aid is not confined to rural and urban health organizations. Not more than half of the state health departments are adequately staffed or satisfactorily equipped to render the services which they alone can give, regardless of the extent to which local facilities may be developed.

The gains made in response to the stimulus afforded by federal participation in state and local health work assume their deepest significance as evidence of the practicability and desirability of an expanding program of general public health services. Existing needs, however, far outweigh the gains and serve as a warning against the assumption of a complacent attitude with respect to recent accomplishments. There still remain large sectors of the United States where the very foundation of a health program has not been laid—namely, a nucleus of full-time, competent, and well trained persons having a professional point of view. Without such a minimum in staff organization, even the elementary services are not possible on an effective scale. Neither can there be an orderly enlargement of community health services without the framework expressed by a properly constituted health department.

(2) SPECIFIC PUBLIC HEALTH PROBLEMS

In addition to strengthening health organization for general purposes, there is a need for concerted attack on specific problems of national health. The needs as well as the program of action in maternal and child health are covered in another section of the Technical Committee's report. Service of comparable intensity should be developed in tuberculosis, venereal diseases, pneumonia, cancer, malaria, mental hygiene and industrial hygiene. With programs of proper magnitude, the eradication of tuberculosis, venereal disease, malaria and certain occupational hazards may be envisioned; lowering of mortality from pneumonia and cancer is possible; and in the case of mental disorders, morbidity can be reduced. Each of these problems will now be considered individually.

(a) *Tuberculosis*.—Students of this problem are in substantial agreement to the effect that programs now may be planned with a view to final eradication of tuberculosis, or at

least to effect a reduction to a point where this disease is no longer a significant factor in morbidity and mortality. Despite the great reduction in death rate that has been accomplished, tuberculosis is still a major cause of death and disability in the United States. While for the whole population it ranks seventh as a specific cause of death, for the age group 15-45 years, its position is second only to that of accidents. The disease works its greatest havoc among Negroes, among workers in certain occupations, and generally among persons of low income.

On the average, 70,000 persons die of tuberculosis annually; and for each death there are estimated to be about five living cases; thus, in any year the active disease probably is represented by 420,000 individuals. Within their families, these cases expose over a million persons to infection. By the working of this cycle alone, there is maintained a tuberculous population numbering 1,500,000.

(b) *Venereal Diseases*.—Legislation enacted by the last Congress may be cited as evidence of the growing appreciation which representative bodies now have for the public health importance of syphilis and gonorrhea. Funds appropriated by this act, coupled with those of state and local health agencies, will make possible improvement of laboratory service, organization of additional and better treatment facilities, and the free distribution of standard remedies for use by public clinics and private physicians. The sums of money now available, large though they may seem in comparison with previous annual appropriations, will prove sufficient only for beginning the type of attack on venereal diseases that is indicated.

To substantiate this point, no more data than the following need be adduced: It is estimated that approximately 518,000 new patients infected with early syphilis seek treatment each year; the gonorrhea cases coming to medical attention number about 1,037,000. It is probable that even these figures, particularly the latter, grossly understate the amount of recent infection. Some 60,000 cases of congenital syphilis occur annually; syphilitic involvement of the heart and blood vessels, and of the nervous system result in 50,000 deaths in addition to those specifically assigned to syphilis. At least 10 per cent of first admissions to hospitals for mental disease are attributable to syphilis in its manifestations as general paralysis (dementia paralytica).

Early and adequate treatment of syphilis and gonorrhea is the best method, in fact it is the only feasible one known at the present time, for cutting down the incidence of these diseases and for mitigating their consequences.

(c) *Pneumonia*.—Effective serums are now available for treating the more common forms of pneumonia. If serums were used generally, it is estimated that the gross pneumonia mortality could easily be reduced by more than 25 per cent. The possibility it offers for saving of lives may be appreciated when one understands that 150,000 deaths each year are credited to pneumonia either as a primary or contributory cause of death.

According to the best information at hand, 5 per cent would be a liberal estimate of the pneumonia cases amenable to serum therapy that now receive therapeutic serum. Perfected, or concentrated, serum is a new product which has not yet been sufficiently popularized; the cost is still high, varying from \$25 to \$75 per case. Moreover, serum therapy is not feasible except where rapid and accurate laboratory diagnostic service is available. In other words, the prevention of pneumonia mortality is an expensive job that requires certain special facilities and a scheme for coordinating the resources of public agencies with those of practicing physicians. Present activities in this field are generally inadequate. Only eight of the forty-eight states have active programs for accurate diagnosis by typing and for free distribution of serum. In fifteen states no health department laboratory facilities are available for rapid typing of pneumococci, and 29 per cent of American cities of 100,000 population and over have made no provision for pneumonia typing as an activity of their health department laboratories.

(d) *Cancer*.—A hopeless attitude with respect to the outcome of all cases of cancer is no longer justified in view of the results obtained by modern therapy. Cancer in accessible

parts of the body yields to varying combinations of surgery and radiation. Cancers at these sites account for over 40 per cent of the mortality. Should success be achieved in only half of these cases, an annual saving of 30,000 lives would be effected.

Programs for prevention of mortality from cancer, like so many other public health services involving individual care of patients, have been slow in starting. At the present time, only seven states have active, statewide programs. Isolated tumor clinics may be found in some of the better organized outpatient departments of hospitals, but these are usually located in the larger cities. Notwithstanding the limited facilities now available, sufficient experience has accumulated to guide administrative practice.

(e) *Malaria*.—The malarious area in the United States has gradually receded during the past seventy-five years. However, the Mississippi Delta and certain of the southeastern states remain endemic foci. Even in these regions it is now largely a rural disease, but there it shows little tendency toward spontaneous decline. In theory, the disease should be eradicated easily by control of the *Anopheles* mosquito and other established procedures. In practice, however, economic difficulties stand in the way.

Of late, substantial progress in the application of malaria control measures has been accomplished through work-relief projects financed by the Works Progress Administration. These programs entailed drainage operations designed to eliminate mosquito breeding places. While it is expected that additional progress may be made in this way in the future, the need for malaria control measures of a diversified nature is of sufficient importance to justify a more permanent basis of financial support.

(f) *Mental Hygiene*.—Problems of mental ill health are represented only in part by the half million persons confined to institutions. At large in the general population, there is a somewhat greater number of people who are psychotic or defective in varying degrees. In addition, there is an indefinite but still larger proportion of persons below par from the standpoints of intelligence or emotional balance. Because of their personality makeups, they encounter difficulty in school, in industry and in their relations with others. Such people, without treatment or guidance, contribute little to national progress. Aside from the economic and social problems associated with these more obvious groups, many people in all walks of life are unable to experience the happiness and fullness of life associated with mental and physical health. Because of individual emotional disturbances, family discord grows apace, antisocial behavior is bred, and industrial differences often end in unnecessary strife. Sufficient knowledge is at hand, which, if more generously applied, could resolve many of these emotional conflicts.

In the absence of specific therapy for so many of the mental disorders, the whole problem must be approached on a broad front. Persons who are seriously psychotic, those of very low mentality and the habitually criminal must be found and appropriate custodial and therapeutic care instituted. The benefits of modern diagnostic, treatment and guidance methods must be made more generally available for the borderline groups. A program involving federal assistance toward the expansion of both custodial and preventive facilities and services is indicated.

(g) *Industrial Hygiene*.—The health of more than fifteen million people who constitute that important segment of our population engaged in productive occupations, and on whom the lives and health of the remainder of the population depend, should be of paramount concern to those entrusted with the welfare of this nation. It is the object of industrial hygiene to protect and improve the health of this large group. This is best accomplished through the recognition of certain fundamental requirements of industrial hygiene.

The problem of determining the extent of illness among industrial workers remains one of the major functions of industrial hygiene. Any health program is dependent on the standards and completeness of the health supervision provided industrial workers. At the present time, inadequate services

exist in most of the plants employing 500 or less workers, representing some 62 per cent of the working population. The need for industrial health education and training of professional personnel is general throughout the country. Important work must also be done in treating and caring for workers affected by exposure to toxic substances or other detrimental environments. The development of control and preventive measures for reducing occupational diseases needs attention. Laboratory and field research are also functions which must be maintained and enlarged, since new substances and environments are constantly being developed which may affect the health of exposed workers.

PART II. RECOMMENDATIONS

The Technical Committee on Medical Care submits for the consideration of the National Health Conference a program containing five specific recommendations. The first recommendation is concerned with the expansion of present federal-state programs for public health work and maternal and child welfare services under the Social Security Act.

In view of the fact that a good beginning has been made in more recent years toward carrying out health activities through well planned and directed effort, the Committee therefore proposes:

RECOMMENDATION I-A: EXPANSION OF THE EXISTING FEDERAL-STATE COOPERATIVE PROGRAM UNDER TITLE VI (PUBLIC HEALTH WORK) OF THE SOCIAL SECURITY ACT

It is recommended that federal participation in state and local health services under title VI be extended through increased authorization for grants-in-aid to the states. Increasing federal participation and leadership should promote the inauguration and expansion of fundamental and accepted health services and the extension of newly developed services requiring special administrative technics, under state and local operation and control.

(1) PUBLIC HEALTH ORGANIZATION

The Technical Committee recommends that primary consideration be given to the development of local health organization with special reference to units for counties and large cities, and to the provision in the state and federal agencies of consultants who are equipped to serve the local departments. Local health services will be directed by full-time health officers who will have as assistants an adequate staff of trained public health workers. The maintenance of facilities for the training of additional public health personnel and allied professional workers should continue.

To further the development of a basic health department structure for the nation, the Committee recommends the addition of not less than \$23,000,000 to the amount now available from all sources—federal, state and local. This would be utilized largely for providing additional full-time health officers, epidemiologists, public health nurses, sanitary engineers, sanitarians, laboratory technicians and other personnel.

(2) SPECIFIC HEALTH PROBLEMS

The Committee further recommends that the part of the proposed national health program concerned with the expansion of public health services under the Social Security Act be directed particularly toward reducing disability and premature mortality from certain important causes of sickness and death, with which public health is already equipped to deal in an effective manner through measures of proved value.

(a) *Tuberculosis*.—A control program of the kind recommended by health authorities for the eradication of tuberculosis embraces case finding, especially by x-ray examination of contacts to known cases; isolation and treatment (usually bed care) of persons with active disease, and periodic observation of those whose disease is latent or quiescent. All these procedures should be followed in an aggressive manner throughout the United States.

The Technical Committee on Medical Care recommends prevention of the spread of tuberculosis through just such a program of case finding, directed particularly toward persons in

areas of economic need and in age groups among whom the incidence of the disease is high; of providing adequate clinics under the direction of medical specialists for the examination of all cases, especially contact cases; of more extensive hospitalization of incipient cases; of the isolation of open cases, and follow-up and rehabilitation of arrested cases.

Leadership may be expected of public health agencies, but first, sufficient funds for defraying the costs of an active campaign must be placed at their disposal. Over and above the amounts specified in recommendation II for tuberculosis hospital construction and temporary maintenance, the Technical Committee recommends that \$43,000,000 be made available annually from all sources for other elements of the tuberculosis program. Of this amount, \$37,500,000 would be used toward defraying the costs of hospital care for tuberculous patients; the remaining \$5,500,000 would be set aside for case finding and other field services.

(b) *Veneral Diseases*.—The Technical Committee recommends a gradual increase in federal, state and local appropriations for the control of the venereal diseases until a level of \$50,000,000 per annum has been reached. Such a program would be developed along the well established lines now being pursued.

(c) *Pneumonia*.—For the development by states of programs for reducing pneumonia mortality, the Committee recommends annual appropriations from all sources amounting to \$22,000,000. One half of this amount would be available for the purchase of serum; the other half would be used for the support of laboratories, nursing and other field services. For the provision of serum, this estimate deals with the medically needy only, however.

The extension of typing facilities, the provision of free serum for every case of pneumonia requiring it, as well as adequate medical and nursing care, either in the home or in hospitals, for all persons unable to pay the cost of such services, are inherent in the effectiveness of a pneumonia control program. Such a program should also provide for training of administrative and technical personnel required in its developments as an accepted public health activity, and should integrate the efforts of the private physician on whom rests the ultimate responsibility for the success of the program.

(d) *Cancer*.—The prevention of mortality from cancer necessitates the setting up of diagnostic and treatment centers in sufficient numbers to be accessible for people in all parts of each state. Such facilities may be organized as new and self-contained units, or they may operate in conjunction with pre-existing general hospitals. The latter scheme can be made an important adjunct of a central state hospital. In this way, the resources of the state are made a part of general medical care and incorporated into preexisting facilities. Every cancer center, however, should have certain perquisites. Among these may be mentioned a medical staff on which is represented the various specialties of medicine associated with the diagnosis and treatment of cancer, a pathological laboratory, x-ray equipment for deep therapy, radium and hospital beds. Since cancer is a chronic disabling illness that entails high costs for diagnosis and care, it is essential that facilities be financed in very large measure from sources other than patients' fees.

Public clinics are at present totally inadequate to meet the need for the diagnosis of cancer. The Committee recommends the immediate extension of such diagnostic facilities, with modern equipment and operated by trained medical and technical personnel. The development of treatment centers for ambulatory cases requiring periodic application of radium or roentgen therapy is required, as well as the provision of medical and nursing care, either in the home or hospital, for persons unable to purchase such services. Such cases will require supervision after their release from treatment. In addition, a basic plan of lay education, emphasizing the importance of early diagnosis of cancer, should be a part of the general cancer program.

The Technical Committee recommends for the prevention of mortality from cancer, additional appropriations, from federal, state and local sources, of \$25,000,000. These funds would not be used for fundamental research, since no duplication of pres-

ent federal effort is contemplated in the Committee's program. Provision for an intensive program of cancer research, under federal leadership, has been made in the National Cancer Act of 1937. The funds recommended by the Committee would be used by the states in the establishment of diagnostic and treatment centers and for assisting in meeting the costs of hospital care. During the early years, expenditures for facilities would be relatively large, but once these had been established, proportionately more could be devoted to the actual care of patients.

(e) *Malaria*.—The Committee recommends the establishment in state and local health departments, within malarious areas, of definite units that will give particular attention to all the aspects of malaria control. In addition to extending and maintaining drainage systems already begun, a malaria program would embrace a concerted attack on the mosquito and an attempt to eliminate residual parasites in clinical cases and in "carriers" of the infection. Obviously such a program will involve considerable expense. The Committee recommends annual federal, state and local appropriations of \$10,000,000 to be expended by health agencies in this field.

(f) *Mental Hygiene*.—Another section of the Committee's report (recommendation II) contains a program involving federal assistance toward enlarging institutional facilities for the care of the mentally ill and defective. In addition to supplying needed beds, the funds proposed in recommendation II should be used to improve diagnostic and treatment facilities. Thus, state institutions will be in a better position than most of them now are to exert influence in a sound program for mental hygiene. It seems only proper that these institutions should be the agencies through which the program for mental hygiene should be developed. From the points of view of economy, efficiency and practicability, therefore, it is possible to visualize the initiation of a mental hygiene program in the several states with such institutions serving as centers for the provision of necessary services.

In the contemplated program of mental hygiene, provision would be made for voluntary admission of patients for intensive treatment of acute and recoverable forms of mental illness with a view toward preventing permanent disability and restoring such patients to the community. The proposed mental hygiene centers would also provide clinics for the diagnosis, treatment and guidance of persons suffering from maladjustments not requiring hospital care. The staff of the center would also provide consultation services to local physicians, health authorities and the courts. The resources of schools, churches, industry and mass instruction would be used under the guidance of the center to teach the basic principles of mental health.

The development of a field service, extending to surrounding areas, and equipped to provide such diagnostic, consultant and guidance services would require additional funds for the employment of physicians, auxiliary personnel, and for other expenses of such a service.

Over and above the sums designated in recommendation II for structural improvements in state institutional facilities for mental disease control, the Committee therefore recommends appropriations for the provision of field programs in mental hygiene. The funds appropriated from all sources should reach the sum of \$10,000,000 as rapidly as possible and should continue annually thereafter.

(g) *Industrial Hygiene*.—Recent developments in organization for industrial hygiene demonstrate so well what may be accomplished under the leadership of the federal government. Prior to January 1936 only three states and one city had programs for industrial health. The very limited funds available since then through title VI of the Social Security Act have made possible the organization of units in twenty-one additional state health departments and three city health agencies. The plan of development should continue until a unit has been established in every state and in those local health jurisdictions where the problem justifies. Once the basic framework of organization has been built up, technical personnel, laboratory facilities and the necessary number of field consultants should be added. An appropriation of not less than \$20,000,000 is needed annually by the health agencies for essential research and for preventive work in the states.

(3) TOTAL COSTS

The estimated maximum annual costs of the expanded programs which have been outlined would be as follows:

1. Public health organization	\$ 23,000,000
2. Tuberculosis	43,000,000
3. Venereal diseases	47,000,000*
4. Pneumonia	22,000,000
5. Cancer	25,000,000
6. Malaria	10,000,000
7. Mental hygiene	10,000,000
8. Industrial hygiene	20,000,000
Total	\$200,000,000

* \$3,000,000 already appropriated by the federal government for the current federal fiscal year.

The figures set forth in the preceding table in each instance represent the total estimated amounts required from all sources—federal, state and local—at the time when the recommended programs would reach their maximum intensity, for services needed in addition to those now provided under existing appropriations. The Committee wishes to make it clear, however, that the estimated maximum amounts are, to a certain extent, tentative in character. It is difficult to forecast very accurately just how much money would be needed for certain programs at their peak of operation. Much more accurate estimates undoubtedly could be made after opportunity were afforded to see how far the amounts estimated and presented here would go in meeting the specific problems. The Committee does not suggest that the maximum amounts recommended for operation at the peak should be made available during the first year. Before these programs can be organized and placed in operation successfully, the necessary technical and professional personnel must be recruited, additional physical facilities provided, and states and local communities must have time to provide additional appropriations.

It should be pointed out here that certain programs with which this section of the report deals provide for some services which would be covered to a considerable extent by programs presented in other parts of the Committee's report. To the extent that costs may be duplicated by provisions in succeeding parts of the whole program, the amounts recommended in this section could be reduced if the funds were provided under the other programs.

While the operation of the programs recommended would call for formidable sums during the years of full operation, it need not be assumed that expenditures for all of the items would have to remain at the maximum level indefinitely. Indeed, should the proposed activities prove as effective as it is believed they would, the costs of maintaining services for the control of certain preventable diseases might be expected to diminish progressively and be greatly reduced in the future as the eradication of these diseases is effected.

Of the total amount recommended in this report for the expansion of preventive health services, it is considered proper that the federal government might be expected to contribute approximately half for the country as a whole. However, this should not be interpreted to mean that matching necessarily would be required on a fifty-fifty basis in each state. The basis for determination of state allotments and requirements set up for matching obviously should take into account such factors as the extent of each problem, the status of financial resources in each state, and other factors that might be given consideration.

It is suggested that in a ten year program, the probably necessary increases in appropriations by the federal government for grants-in-aid to the states and for administration, demonstration and investigation, exclusive of the expected state and local expenditures, might start at \$10,000,000 for the first year and gradually increase until a maximum of \$100,000,000 was reached at the beginning of the seventh year.

With respect to the administration of such additional federal appropriations as might be provided, the Committee is of the opinion that the procedure which now obtains in the administration of federal funds available for grants to the states under title VI of the Social Security Act might well serve as a desirable guide for the future. It is proposed that the federal government would continue to provide leadership and technical

advisory services which it now offers, in addition to financial aid to the states. Plans for the work would be initiated in the state health departments. The actual administration and control of activities carried on within the states would remain, very properly, in the hands of the state and local authorities. The chief function of the federal government should be that of acting as an equalizing agent among the several states in order to overcome inequality in financial resources and public health problems, to provide the leadership and guidance essential to the successful establishment and maintenance of a properly coordinated, nation wide attack on the important causes of disability and mortality in the country as a whole.

EXPANSION OF THE EXISTING FEDERAL-STATE COOPERATIVE PROGRAM FOR MATERNAL AND CHILD HEALTH

INTRODUCTION

The need for an expanded program of maternal and child health services has been pointed out by the Technical Committee on Medical Care in its report to the Interdepartmental Committee. It is the opinion of the Committee that in any plan for a national health program, primary consideration must be given to developing adequate provision for maternity care and for safeguarding the health and growth of the nation's children.

Since the first grants to the states for maternal and child health under the Social Security Act became available in 1936, the public health agency in every state, the District of Columbia, Alaska and Hawaii has strengthened and extended its maternal and child health program. Our two and a half years' experience with this program and with federal grants to the states for services for crippled children has made us aware of where these activities fall short and has given us a basis of administrative experience on which we can plan for needed expansion.

The most serious deficiency in the present maternal and child health program is lack of provision for medical care for mothers and children who are so situated that they cannot obtain needed care without some form of assistance from the community.

The advances that have been made in scientific knowledge and professional skill in conserving the lives and health of mothers and children place upon us the obligation to find the ways and means whereby the whole population can benefit from this knowledge and skill.

PART I. EVIDENCES OF NEED FOR AN EXPANDED PROGRAM

(1) SPECIAL NEEDS OF MATERNITY AND INFANCY

The health and security of children depend to a great extent on the life and health of the mother.

Each year a birth occurs in the households of 2,000,000 families in the United States, an event the cost of which must be rated in the category of major medical expenditures. To society the outcome of these two million births in terms of the survival and health of the mother and child is of sufficient significance to warrant the provision by government of facilities to insure the best possible care for all who are unable to provide it from their own resources.

Today there is a great and unnecessary wastage of maternal and infant life and impairment of health is widespread among mothers and children.

Each year about 14,000 women die from causes connected with pregnancy and childbirth; about 75,000 infants are still-born; nearly 70,000 infants die in the first month of life, four fifths from causes associated with prenatal life or the process of birth, and at least 35,000 children are left motherless. Physicians estimate on the basis of experience that from one half to two thirds of the maternal deaths are preventable; that the still-birth rate can be reduced possibly by two fifths; and that the deaths of newborn infants can be reduced at least one third and probably one half. This would mean the saving each year of more than 70,000 lives.

The maternal mortality rate in the United States is high, and there has been but slight decline during the twenty-two years for which we have records. In 1936 the rate was 57 deaths per 10,000 live births. Rates varied widely in different states, from 40 in New Jersey and Rhode Island to 91 in Arizona and 90 in South Carolina. In individual counties the range was even wider, from no maternal deaths at all for a five year period to rates of more than 200 per 10,000 live births. It is well recognized that major reductions in deaths from toxemias of pregnancy and from sepsis associated with delivery could be made at once if facilities for proper antepartum and delivery care were to be made universally available. These two causes together account for nearly two thirds of all maternal deaths. Where proper facilities have been made available, the maternal death rate has been reduced to about one-half that of the country at large.

In the death rate of infants under 1 month of age, there has been but slight decline during the twenty-two years of record, and no decline in the death rate on the first day of life. These deaths are closely associated with the problems of maternity care and, as in the case of stillbirths, reduction in rate should result from more skillful care. Nearly one half of all deaths in the first month of life are among prematurely born infants; with proper care of the mothers, many premature births could be prevented, and with proper care of the infants, a larger proportion could be saved.

Notwithstanding the progress that has been made in reducing infant mortality in the first year of life, there are still each year some 53,000 deaths of infants in the second to the twelfth month of life. That these deaths are closely associated with economic conditions is too well known to need discussion. In spite of great gains there are still areas of the country and special groups in which the mortality in this age group is practically as high today as it was for the country as a whole twenty years ago.

Since 1929, infant mortality in rural areas has been higher than in cities. If preventive measures so successfully applied in many places can be made available in all cities and rural areas, they should bring a further reduction in our infant mortality.

A few salient facts will indicate the inadequacy of present provisions for maternal and infant care. Recent studies have shown that many women receive no antepartum care or inadequate care. In 1936, nearly a quarter of a million women did not have the advantage of a physician's care at the time of delivery. In 1936 only 14 per cent of the births in rural areas occurred in a hospital, as contrasted with 71 per cent in cities. For the great majority of the 1,000,000 births attended each year in the home by a physician, there is no qualified nurse to aid in caring for the mother and baby.

Although progress is being made under the Social Security Act in developing maternal and child health services, there are still more than 1,000 counties in which no public health nurse is employed to serve rural areas. In some rural areas, one nurse must serve a population of as many as 25,000 or more, whereas in cities she serves, on the average, a population of about 5,000. Such a nurse is one of the first essentials of an educational maternal and child health program. She should also be available to aid the mother at time of delivery, but funds have not been sufficient to provide nursing care at delivery or medical care, except to a limited extent on an experimental basis.

It is estimated that more than 1,100,000 births occur each year in families that are on relief or have total incomes (including home produce on farms) of less than \$1,000. Health officers report that many expectant mothers, because of lack of funds, go without proper prenatal care or hospital care and do not seek the services of a physician until too late to save them from serious illness or death.

In most communities resources are limited for providing medical, nursing and hospital care at the time of childbirth. Certain communities, mostly urban, have provided a physician's care and hospital care through public or private effort, but there has heretofore been no planning on a national scale to make

medical and nursing care at the time of delivery available either in the home or in the hospital for mothers in families that cannot provide such care unaided.

(2) SPECIAL NEEDS OF CHILDREN

The increasing proportion of persons in the older age periods has been accompanied by a decline in the proportion of children in the population. The conservation of child life is, therefore, imperative as a measure for maintaining in the future the proportion of people in the productive ages necessary to an economically productive nation.

In childhood, exclusive of the first year, the probability of dying is less than at any subsequent age period, but the probability of being sick is greater than that for adults. Although the average duration of illness is less than in later years, such illnesses often result in protracted or permanent disability. In the recent National Health Survey in eighty-four cities, it was found that of all children under 15 years of age having illnesses that disabled them for seven days or more, 28 per cent had had neither a physician's care nor hospital care. The proportion going without such care was largest among children in families with incomes of less than \$1,000 a year but not on relief (33 per cent), larger even than among children in families on relief (29 per cent).

In the period 1934-1936, on the average, 14,000 children under 15 years of age died annually from whooping cough, measles, diphtheria and scarlet fever; 35,000 from pneumonia and influenza; 19,000 from diarrhea, enteritis and dysentery; 15,000 from accidents; 4,000 from cardiac conditions largely rheumatic, and 4,000 from tuberculosis—an average annual total of 88,000 deaths. These figures represent only a small proportion of the total number of children who are affected by these conditions and who, though they recover, may have suffered permanent injury to their health. The proportion of deaths that are preventable is not known but there is no doubt that many deaths and much subsequent ill health could be prevented by such measures as more adequate control of communicable disease, protection of the milk supply, and systematic health supervision, and by early diagnosis and prompt treatment of conditions and diseases that, without such treatment, tend to become serious or chronic.

In addition, there occur also in childhood many relatively minor conditions that interfere with growth and development or with the general health of the child. Prompt treatment of these is often as important in preventing future disability as is the treatment of more serious diseases.

Child health centers and clinics to which parents otherwise unable to obtain such service may take their children for health supervision or for diagnosis and treatment are still lacking or are insufficient in numbers in many areas. Reports from forty-three states show that in 1937 there were approximately 6,000 child health centers serving 734 counties, towns or other local units in rural areas. About two thirds of the rural areas of the country are not yet provided with such centers.

It is estimated that over six children in every thousand of the population under 21 years of age are crippled or seriously handicapped by disease or conditions such as poliomyelitis, tuberculosis, birth injuries, injuries due to accidents and congenital deformities who may be benefited or entirely cured with proper treatment. It is estimated that in the northern parts of the country at least 1 per cent of school children have rheumatic heart disease, a condition largely remediable with prolonged care. Approximately 30 per cent of all children under 15 years of age have defective vision due to refractive errors. Approximately 5 per cent of school children have impaired hearing. Approximately two thirds of all school children have dental defects. Widespread inadequacy of nutrition is responsible for many cases of the deficiency diseases in children, for increased severity of much illness and for retardation in recovery.

Great progress has been made under the provisions of the Social Security Act providing for services for crippled children in making available orthopedic and plastic surgical service, hospitalization and after-care. There is need of further provision, however, for children crippled or handicapped from heart disease,

diabetes, congenital syphilis, injury due to accident, and other conditions that require prolonged care to insure recovery or restoration leading to self support. The need of facilities for hospital or convalescent care of children with early rheumatic heart disease is particularly urgent in the northern parts of the country. There is great need for discovering early, children with defects of vision and of hearing and those with dental defects and of providing proper treatment to prevent and to remedy serious impairment.

When it is realized that 13,000,000 of the 35,000,000 children under 15 years of age in the United States are in families with incomes of less than \$800 a year or on relief, it becomes apparent that such families are able to pay but little toward the medical care necessary to meet their children's needs and that the problem of providing sufficient care must be the concern of government through health and welfare authorities. The provision of social services as a basic component part of a strong, well coordinated health program is essential. Medical care is more adequate and more economical when provision is made for discovery and for assistance in overcoming the adverse social factors related to disease or disability. The relation of measures directed toward the improvement of the economic basis for family life to those for the prevention and control of diseases and disability is obvious.

(3) THE NEED FOR CONSULTATION SERVICE

The general practitioner gives, and will continue to give, the largest amount of medical service to mothers and children.

However, for dealing with many conditions of maternity, for diagnosing and treating many diseases of childhood, and for guiding development of effective preventive measures in a community, the general practitioner frequently needs to consult with a specialist in obstetrics or in pediatrics. There are many areas in the United States where such specialists are not available or are so inaccessible that the cost of consultation service is prohibitive. A few state agencies provide for a limited obstetric consultation service, but in most states such service is not available through public resources. Hospitals with special services for children are not well distributed geographically so as to be available for diagnosis and treatment of children in difficult cases. Well equipped diagnostic centers strategically situated would fill a great need.

(4) THE PROBLEM IS NATIONAL

In attempting to plan for more adequate provision of maternal and child health services, certain facts must be considered concerning the distribution of children among the several states and geographic areas, especially as it may be compared with the distribution of adults in the productive age groups who must support the children, the national income, facilities for care now available, and such indexes of adequacy of care as infant mortality.

The ratio of births or of children under 15 to the adult population which must support them and the financial resources available for their support vary to a considerable extent in the different states. For instance, twelve states in the Northeast and the District of Columbia caring for 29 per cent of the nation's children, receive 41 per cent of the national income, whereas eleven states in the Southeast, caring for 25 per cent of the children, receive only 12 per cent of the national income. Adults of productive age living on farms must support nearly twice as many children proportionately as do adults of the same age groups in the largest cities. And yet it is in the rural areas and in states receiving the smallest proportion of the national income that the infant and maternal mortality rates remain high and the facilities for care are least adequate. Any plan for extending and improving maternal and child health services must take into consideration these facts.

PART II. COMMITTEE RECOMMENDATIONS

With respect to expansion of the maternal and child health program, the Technical Committee made the following recommendations to the Interdepartmental Committee. In presenting

its report, the Committee expressed the opinion that the recommendations relative to maternity care and medical care of children, as well as those for general public health services, should be given special emphasis and priority in any consideration of a National Health Program more limited in scope than that outlined in the complete series of recommendations.

RECOMMENDATION I-B: EXPANSION OF THE EXISTING FEDERAL-STATE COOPERATIVE PROGRAM FOR MATERNAL AND CHILD WELFARE SERVICES UNDER TITLE V, PARTS 1 AND 2 OF THE SOCIAL SECURITY ACT

(1) EXPANSION UNDER TITLE V, PART 1 MATERNAL AND CHILD HEALTH

It is recommended that federal participation in maternal and child health services under title V, part 1, of the Social Security Act be extended through increased authorization for appropriation for grants-in-aid to states over and above the \$3,800,000 now available each year. Increasing federal participation should allow for a program to provide facilities for care in two general areas: (a) medical and nursing care of mothers throughout the period of maternity and of their newborn infants throughout the neonatal period, and (b) health supervision and medical care of children.

A plan of orderly expansion during the next few years which is compatible with sound administration and a reasonable program for training personnel follows. It assumes (1) a gradual development of the program of maternity care and care of newborn infants with a view to reaching the maximum federal contribution as soon as may be possible, but at least not later than the tenth year and (2) a gradual approach to a general program of health supervision and medical care for children, which would not reach desirable proportions until the full medical care program contemplated in recommendation III or IV is in effect. Administrative procedure would be designed to allow for continued expansion of the program of health supervision and medical care of children under title V, and for cooperation with other plans which may develop for medical care.

(a) *Plan of Expansion.*—Fundamental to the expansion of the program for maternity care and medical care of children is further increase in the basic local health services, including health supervision of pregnant women and of infants and preschool children by local physicians, public health nursing services, health supervision of school children, and the services of dentists, nutritionists, health educators and medical social workers.

Expansion and improvement of the program should be along three lines:

1. Expansion of facilities for conservation of health of mothers and their newborn infants should provide for—

Medical care of mothers and their newborn infants throughout the period of maternity and the neonatal period, including care of the mothers at delivery in the home or in hospital, and of their newborn infants, by qualified local physicians with the aid of specialized consultants, assisted by nurses, preferably public health nurses, trained in obstetric nursing procedure.

Facilities for expert diagnosis and care in diagnostic or consultation centers and in the home.

Hospital care as necessary for medical, social or economic reasons.

2. Expansion of facilities for the conservation of the health of children should provide for—

Health supervision, medical care and, when necessary, hospitalization of older infants and children—the health supervision and medical care to be provided by qualified local physicians with the aid of specialized consultants in local consultation or diagnostic centers, or elsewhere when the ill child cannot be brought to the center.

3. Increased opportunities for postgraduate training of professional personnel—medical, nursing, and medical-social—will be essential in order to provide qualified personnel to carry out the program. Additional centers for such training, especially for postgraduate instruction, would have to be established.

(b) *Estimates of Cost of Proposed Program.*—To provide for such an expanding program, authorization for increased appropriations for grants-in-aid to states under title V, part 1, of the Social Security Act would be necessary. Estimates of cost of care and of the amounts to be authorized for appropriation by the federal government have been made (1) for maternity care and care of newborn infants, and (2) for health supervision and medical care of children. The estimates for (1) maternity care are based on the needs of families on relief or with incomes (including home produce on farms) of less than \$1,000 a year. There are in these families approximately 1,100,000 births annually (live births and stillbirths). The estimates for (2) care of children are based on the number of children under 15 years of age in that third of the population in need of financial assistance in obtaining basic health and medical services, approximately 13,000,000.

Estimates for Maternity Care and Care of Newborn Infants: Estimates have been prepared including cost of (1) medical, nursing and hospital care; (2) development and maintenance of 10,000 additional maternal and child health consultation centers to serve smaller cities, towns and rural areas; (3) development of centers for postgraduate education of physicians, nurses, medical social workers; and (4) federal and state administration.

The total cost to federal, state and local governments for maternity care and care of newborn infants in families at the income levels specified is estimated to be approximately \$95,000,000. Maximum federal participation, including cost of administration, demonstration and investigation, is estimated to be approximately \$47,500,000. It is recommended that for the first year of the expanding program authorization for appropriation under title V, part 1, of the Social Security Act be increased for maternity care and care of infants by approximately \$4,500,000. Further increases would depend on the rate of expansion of the program, but it is estimated that an appropriation by the federal government of not less than \$25,000,000 should be reached by the fifth year and the full amount in not less than ten years.

Estimates for Health Supervision and Medical Care of Children: The unit cost of providing a minimum of essential medical services for children is estimated to be, on the average, \$10 per child per year; it is recognized, of course, that in individual cases the actual expenditures would vary from much less to much more than this average figure. The average cost is intended to include increased facilities for health supervision by local physicians and public health nurses, minimum essential services of general practitioners and specialists for the care of sick children, necessary medical social services, hospitalization, and other types of special services in minimum amounts. This estimate is supplementary to the sums now being spent for medical care of children by individual families with low incomes or by communities, and represents about half the cost of reasonably adequate services such as are contemplated under recommendation IV.

The overall cost of providing medical care at this rate to the 13,000,000 children under 15 years of age in the third of the population in need of financial assistance in obtaining basic health and medical services would be approximately \$130,000,000 a year.

To make available at this time a portion of this amount in connection with the program of health supervision of infants and children under title V, part 1, it is recommended that sums to provide for a gradually expanding program under this title be authorized for appropriation by the federal government. For the first year of the program it is estimated that an authorization for appropriation of \$3,000,000 would be needed. Annual increases thereafter would depend on the rate of expansion of the program, but it is estimated that an appropriation by the federal government of not less than \$15,000,000 should be reached by the fifth year and not less than \$30,000,000 by the tenth year. It is recognized that these amounts are considerably less than the full amounts needed for a complete program.

However, the difference would be reduced by the provisions of recommendations II and III, which would supplement the recommendations submitted here.

(2) EXPANSION UNDER TITLE V, PART 2. SERVICES FOR CRIPPLED CHILDREN

It is recommended that federal participation in services for crippled children under title V, part 2, of the Social Security Act be extended through increased authorization for appropriations for grants-in-aid to states over and above the \$2,850,000 now available each year for the purpose of meeting the needs of additional children who by reason of serious physical handicap require prolonged care of the kind already provided under existing programs. Increasing federal participation should allow for an expansion of program as follows:

Increased facilities for orthopedic and plastic services for the care of children who are crippled or suffering from conditions that lead to crippling from diseases of bones, joints or muscles.

Increased facilities for care of children who are suffering from heart disease, injury due to birth or accident, or other diseases or conditions that require prolonged care to insure recovery or restoration leading to self support.

This program should be closely related to the proposed expanding program of general health and medical services to children under part 1 of title V, and should be directed toward the care of children whose physical needs or social needs arising out of their physical condition require especially intensive service. For the first year of the expanded program it is estimated that authorization for an additional appropriation of federal funds of \$2,000,000 would be needed and that an amount of not less than \$5,000,000 would be needed by the fifth year. The amounts required after that period would be determined on the basis of experience.

(3) FEDERAL PARTICIPATION AND PARTICIPATION BY STATES AND LOCAL COMMUNITIES

The first few years of expansion of the programs for maternity care and health conservation and medical care of children and services for crippled children may be expected to be a period of development and equalization of services and, therefore, one in which federal financial participation would be relatively large, supplementing present expenditures by the states or local communities. Increasing financial participation by the states would be encouraged. In determining the extent to which each state would be eligible for federal aid, account would be taken of (1) the ability of states to provide for support of necessary services, and (2) the need for maternal and child care as shown by mortality and morbidity rates, present facilities for care of mothers and children, personnel in need of training and facilities for training, and the need for services for crippled children as shown by the number of such children in need of care and the cost of providing care.

RECAPITULATION

The opportunity is before us to make a major gain in our provision for the health of mothers and children. The proposed program calls for extension of our health services into all parts of the United States, for an expansion of the program to fill gaps in existing services, for more adequate facilities for training professional workers, and for cooperation of public agencies with the medical, dental, nursing, and social service professions to make sure that medical and related services are available to mothers and children of all income groups and in all parts of the United States.

The proposed program contemplates during the first year an increased expenditure by the federal government through grants to states as follows:

Maternity care and care of newborn infants.....	\$4,500,000
Medical care of children.....	3,000,000
Services for crippled children.....	2,000,000

During succeeding years, the program would be expanded gradually, reaching at least by the tenth year a proposed federal expenditure of \$47,500,000 for maternity care and care of newborn infants, \$30,000,000 for medical care of children and \$5,000,000 for services to crippled children.

REPORT
of the
TECHNICAL COMMITTEE ON MEDICAL CARE
to the
NATIONAL HEALTH CONFERENCE

SESSION IV

Tuesday Afternoon, July 19—2 p. m.

Oscar L. Chapman—*Chairman*

Hospital Facilities

—*Presented by Joseph W. Mountin*

Public Health Service

Discussion

Medical Care for the Medically Needy

—*Presented by George St. John Perrott*

Public Health Service

Discussion

HOSPITAL FACILITIES

PART I. STATUS AND NEED OF HOSPITAL FACILITIES

No scheme for promoting the nation's health can be considered complete or wholly effective that does not give due consideration to hospitals. The growing importance of these institutions arises from a variety of causes. Chief among these is the fact that the home and the family structure are less suited to the needs of the sick than they were even a generation ago. As medicine advances scientifically, the facilities represented by a hospital become more essential for accurate diagnosis and proper care. Every indication suggests that this trend will continue and perhaps at an accelerating rate. While general statements such as these apply to all hospitals, a special set of circumstances with respect to status and need is associated with hospital of separate categories. Sufficient definition of these points is attained by classifying hospitals according to three medical types: general, tuberculosis, and mental. In the appendix to this hospital section of the report by the Technical Committee on Medical Care may be found a series of tables which detail the hospital status of this country. Because federal hospitals admit selected beneficiaries drawn from the nation as a whole they have been omitted from the estimates of needs, since this report is a discussion of community facilities that may be assigned in some measure to population groups.

(1) GENERAL HOSPITALS

The growth of general hospitals in this country has been closely related to advances in surgery. In the main, their development may be credited to charitable impulse and to private enterprise. According to returns of 1937, general hospitals which meet the registration requirements of the American Medical Association number about 4,500. Slightly more than half of these are operated by corporations not organized for profit, roughly one third are proprietary and conducted without restriction as to the use of income, while state and local governments participate to the extent of about 15 per cent as operating agents. These proportions change somewhat when facilities are computed on the basis of beds, since government hospitals tend to be large, nonprofit of medium size, and the proprietary very small. The 410,000 beds in general hospitals are distributed by control as follows: about 27 per cent are in hospitals of state and local governments, 62 per cent in nonprofit hospitals, and about 11 per cent are proprietarily owned.

(a) *Source of Income.*—Closely allied to control of hospitals is their source of income. Governmental hospitals, as one might expect, are supported mainly through taxation; on the other hand, fees collected directly from patients furnish 70 per cent of the income for nonprofit hospitals, and for the proprietary group, more than 90 per cent. Endowments produce about 6 per cent of the income for nonprofit hospitals and they obtain in gifts an amount of perhaps the same magnitude, but income from these sources is negligible for the proprietary group. Pay-

ments made by governments to nonprofit and proprietary hospitals for the care of public charges were larger in 1935 than the total of all private gifts. Thus, one may observe that most of the free and part-pay service of voluntary hospitals must be accomplished by passing the costs on to patients who through payment of overcharges create the necessary reserve. Individual hospitals, particularly in large cities, may constitute an exception to this general rule.

(b) *Distribution.*—The general hospital is predominantly an institution of population centers. Among the counties of the United States, 1,338 or over 40 per cent, do not contain a registered general hospital. True, most of these counties are not populous, yet nearly one third of them have 15,000 or more inhabitants; and in the aggregate, counties without hospitals contain about 17,000,000 people. Remoteness from metropolitan centers, a very small percentage of urban population and low tax income also characterize the counties without hospitals.

The ratio of beds per thousand of population exceeds 52 in 23 large city-counties of 200,000 or more inhabitants and averages 5.0 for the 46,000,000 persons residing in such counties. When hospital facilities according to states are related to the combined population residing in areas designated as metropolitan in character by the United States Census Bureau together with counties immediately adjacent thereto, it is found that hospital facilities exceed 4.7 beds per thousand persons for 25 per cent of the states. In the areas beyond these metropolitan counties 3.1 beds or more per thousand are found in 25 per cent of the states. Voluntary hospitals, be it recalled, are predominant among those of general medical type; therefore it is to be expected that economic opportunities must have had greater weight than social needs in determining the present distribution of hospitals with respect to population.

Self evident, though often overlooked, is the fact that mere presence of a hospital in a county or one adjoining may have little meaning to underprivileged people unless funds for meeting the costs of service are assured. Previously it was stated that proprietary hospitals subsist almost exclusively on fees collected directly from patients, that those classed as nonprofit derive more than 70 per cent of their income from this source, and that governmental hospitals are as a class supported through taxation. On combining location with ownership, the data indicate very clearly that general hospital service is not available to a very large segment of the population either through faulty location of the hospital or because the potential patient is unable to purchase service. Specifically, the data at hand show that among the 1,737 counties with local general hospitals, 519 have nothing but proprietary institutions; 786 are served by nonprofit hospitals alone or in conjunction with those proprietarily owned, and only 432 counties contain local tax-supported facilities.

The counties with city-county institutions represent a total population of about 59,000,000, which is largely urban in character. Other checks such as per capita expenditures by governments for hospitalization, and days of care reported by representative samples of population emphasize over again that people of low income obtain little hospital service except in areas having a reasonable proportion of tax-supported or endowed beds. In the smaller towns and rural areas, admission of the poor to bed care usually signifies an acute emergency necessitating surgical intervention. Exceptions to this statement are found in a few counties where governmental general hospitals, and in a few states where state-supported general hospitals meet a part of the need.

The amount of chronic disease and the need and economy of adequate care have been demonstrated by the National Health Survey. Some chronic patients require diagnostic and treatment services equivalent to those of an acute hospital case; others need only skilled nursing or custodial care after their condition has been diagnosed.

(c) *Use of Hospital Facilities.*—The average daily census of patients in general hospitals is equivalent to 70 per cent of the bed capacity. Broadly speaking, the facilities of large and medium-sized capacity are utilized more fully than those of small. Average occupancy of beds is less than 50 per cent of

full capacity in those hospitals that depend for revenue on payments by patients, while the great majority of tax-supported beds approach full utilization. At certain seasons of the year, many tax-supported hospitals experience overcrowded conditions. In the range between these extremes, occupancy of hospital beds is inversely related to the percentage of income that is derived from patients. The proportion of hospital income that is obtained from different sources may therefore be used as a measure of their ability to serve different economic groups in the population. Obviously the economic barrier between need and service must work its greatest hardship in those areas where no provisions are made in the scheme of hospital finance for necessitous persons.

(d) *Stability of Hospitals.*—Another point bearing on service for a community is the assurance of uninterrupted hospital operation. In relation to this point, the data show continuity of existence during the study period (1928-1936) for 83 per cent of government hospitals, 73 per cent of hospitals classed as church and corporation, and 37 per cent of those operated by individuals and partners. It is impossible to separate the effects of management from finance on this behavior, since the two are so intimately tied together. Sufficient is the observation that the constant needs of illness cannot be met by such ephemeral institutions as the proprietary group.

(2) TUBERCULOSIS SANATORIUMS

In that section of the Technical Committee's report entitled "Expansion of General Public Health Services," recommendations are made with respect to case finding procedures and grants-in-aid for bed care of the tuberculous. Therein it was also contemplated that the sanatorium should take a vital part in an integrated program for control of the disease. This scheme of health organization is not possible for many sections of the United States because the institutions do not exist or they lack resources in the way of personnel and funds.

(a) *Existing Facilities.*—Facilities for the United States as a whole are represented by 65,000 sanatorium beds and 22,000 beds set apart for the care of the tuberculous in hospitals of other types. Of the beds in sanatoriums proper, 80 per cent are operated by state and local governments and 20 per cent by nonprofit and proprietary agencies. The great majority of those beds not in sanatoriums also are under governmental control. More than half of them are attached to institutional infirmaries and therefore are not available for a general control program.

(b) *Source of Support and Use of Tuberculosis Facilities.*—As in the case of general hospitals, source of financial support is the main factor determining the extent to which available beds are used. For example, occupancy of beds rises to 92 per cent of capacity where less than 10 per cent of the cost is defrayed through fees collected from patients; and it falls to 67 per cent when patients furnish more than 90 per cent of the revenue. Bed care in tax-supported institutions as a rule is furnished without cost to the patient, while the opposite financial arrangement obtains in private sanatoriums, except for a fairly significant proportion of persons that are maintained there at public expense. Since such a small proportion of patients meets the costs of their care, financial barriers that commonly exist between patients and medical service offer no great handicap to reasonably full use of existing facilities for bed care of the tuberculous. The immediate need, so far as institutional care may be concerned, is for increasing the existing number of beds.

(3) MENTAL INSTITUTIONS

For all practical purposes, institutional care of persons with mental disorders may be regarded as a monopoly of state and local governments. Together they operate 509,000 beds, or about 96 per cent of the total in mental hospitals. The state government being the principal operating agency, institutions are large and service is organized on a statewide basis. While it is true that there are fifty-two institutions of nonprofit and 182 of proprietary classification, these places maintain only 4 per cent of the beds. Furthermore, private institutions serve in particular the well-to-do.

Data which describe the manifest demands on facilities for mental patients are found in the percentage of occupancy reported by hospitals under the various types of control. The median, or middle, nonprofit hospital reported 80 per cent of all available beds in use, while 63 per cent of the beds were occupied in the median proprietary hospital. Tax-supported mental hospitals reported crowded conditions. In the median hospital under state control, 96 per cent of all beds were utilized, while an occupancy of 94 per cent was reported by the median city or county hospital. Governmental hospitals for persons with mental disorders may be characterized as follows: They are large; they are numerous; and they are fully occupied. Nongovernmental hospitals, on the other hand, are small and less completely filled.

(4) FUNCTIONS OTHER THAN BED CARE

(a) *Outpatient Services.*—Ambulatory sick in any community exceed in number those requiring bed care. The hospital outpatient department, commonly spoken of as the free dispensary, is a device that has demonstrated many advantages for meeting the needs of the sick poor who are able to come to some fixed point. Aside from lowered service costs that accrue from volume of work, the clinic brings together specialists representing various branches of medicine at a place where they have access to laboratory services, x-ray, and similar aids to diagnosis and therapy. Since hospital outpatient departments may be utilized in carrying out recommendation III, "medical care for needy persons," this type of facility should be considered in any scheme of hospital organization. At the present time outpatient departments are not sufficiently numerous or widespread to afford a basis of operation.

By using organized outpatient departments of general hospitals as a measure of resources, both the deficiency and the uneven distribution of such units become even more apparent than was the case for hospital beds. According to available information, there are some 770 organized outpatient departments that operate in connection with general hospitals. About 35 per cent of government hospitals and 20 per cent of nonprofit hospitals afford this type of service for the destitute and very low income groups of the population. Clearly defined departments of this type do not seem to be a feature of proprietary hospitals. Even more than hospitals, general outpatient departments are institutions peculiar to large cities. Each of the cities above 250,000 population reports one or more outpatient departments, while only 2 per cent of cities below 10,000 have such resources. It is not until cities reach 50,000 that more than half of them are provided with this type of service.

As a general rule, mental and tuberculosis hospitals are not so situated that organized outpatient departments can become a regular feature of their service. Services for patients of these types are more frequently associated with general hospitals. In all, 145 outpatient departments reported psychiatric clinic divisions, and of these, 115 were associated with general hospitals. Similarly, of the 201 departments reporting tuberculosis clinic divisions, 140 had general hospital sponsorship.

Development through hospitals of service for the ambulatory sick is contemplated in the proposed program of hospital development. In some instances the arrangement can be quite informal, involving little more than the use of regular hospital equipment. Where the problem of caring for dependent and medically needy persons is of sufficient magnitude, an outpatient department should become a definite unit in the hospital organization. For areas remote from hospitals, it will be necessary to develop centers with special equipment for diagnosis and treatment. Such facilities may be used jointly by the practicing physician and the public health agencies.

(b) *Influence on Medical Practice.*—Over and above the bed care and the ambulatory service commonly associated with hospitals, many students of administrative medicine conceive of the hospital as having in its own right a reputation and a body of traditions—in other words, an institution with a personality. The Committee believes it is feasible, through proper equipment and staff arrangement, for hospitals to become institutions for elevating medical practice and for extending various types of care to all groups of the population.

PART II. RECOMMENDATIONS

From the foregoing facts and from others that might be adduced, one should readily perceive that there are deficiencies in the present scheme of organization which serve to limit the usefulness of hospitals to patients and circumscribe their influence on medical practice. These deficiencies include insufficient number of institutions and beds, improper location, incomplete services, and inadequacy of financial support; they apply in varying combinations to hospitals of different classification. In some degrees, recommendations submitted by the Technical Committee regarding public support of hospital care for necessitous persons will bring about greater use for existing facilities. Such action alone would be only a half-way measure; further construction, extension of services, and broadening of the basis for financial support are indicated. To this end, the Technical Committee submits:

RECOMMENDATION II: FEDERAL GRANTS-IN-AID FOR THE CONSTRUCTION OF NEEDED HOSPITALS AND SIMILAR FACILITIES, AND SPECIAL GRANTS ON A DIMINISHING BASIS TOWARD DEFRAYING THE OPERATING COSTS OF THESE NEW INSTITUTIONS IN THE FIRST THREE YEARS OF THEIR EXISTENCE

(1) EXPANSION OF GENERAL HOSPITALS

Since the demand for service in general hospitals is conditioned so largely by ability of patients to pay, local experience with respect to use may not always be taken as a reliable measure of need. This is particularly true of rural areas since there so large a percentage of the beds are supported by fees from patients. For urban areas, especially the populous ones, beds in more reasonable proportions are free or obtainable at less than maintenance cost; there the ratio of beds may run as high as 9.5, while for the median city-county containing more than 200,000 inhabitants, the ratio is 4.3 per thousand of population.

Again taking for a base metropolitan areas as designated by the United States Census Bureau plus counties immediately adjacent, the average ratio is 4.1 per thousand. Despite the financial restrictions which now limit hospital utilization, 72,000,000 people residing in such trade areas have seen fit to establish average facilities approaching the standard of adequacy so frequently reached through professional judgment, namely 4.5 hospital beds per thousand of population.

Bed accommodations also vary with states from 1.26 to 5.5 per thousand of population, with a figure of 3.1 representing the median state. To bring all state averages up to 4.5 will require the addition of 180,000 beds. Some of these beds would be added to existing hospitals, but most of them would call for new units to be located in areas now without hospitals or having hospitals whose physical or financial deficiencies preclude their becoming true community institutions. There is need for at least 500 hospitals in areas largely rural in character. Those hospitals would be primarily small (thirty to sixty bed) institutions. The large number of beds needed for chronic patients should usually be built in association with general hospitals.

(2) EXPANSION OF TUBERCULOSIS SANATORIUM FACILITIES

By following the generally accepted measure of institutional accommodations, namely beds per annual death, one finds that the ratio for the United States as a whole is 1.15. Ratios for individual states vary from 2.75 down to 0.20; only five states have two or more beds per annual death, while in twenty-six states this figure is less than one. Nine states do not make legal provision for sanatoriums; five of these subsidize care at local institutions, but in four states no statewide provisions are made for hospitalizing patients. Clinical experience has demonstrated that two beds per annual tuberculosis death are required for hospitalization of the tuberculous in areas having a reasonably aggressive case finding program. To bring facilities of the whole country up to this standard after allowing for a continuing reduction in number of deaths would require the addition of approximately 50,000 beds. Some of these beds may be incorporated into existing general hospitals and sanatoriums, but in several states entirely new institutions should be established.

(3) EXPANSION OF MENTAL INSTITUTION FACILITIES

The ratio of beds to population varies with the states from 6.88 down to 1.96. The state represented by the upper quartile has 4.8 beds per thousand, while 3.86 beds expresses the median state. States on the upper 25 per cent performance level contain about one fourth of the total population of the United States. While no absolute figure in beds can be taken to express the needs for institutional accommodations, there is every reason to suppose that provisions already made by states in the upper 25 per cent group are not in excess of actual demand as shown by occupancy in excess of rated capacity. The lower figure for this group, namely 4.8 beds, may therefore be taken as a reasonable standard that is amply supported by experience.

To bring the ratios of beds to population in all states up to this standard of 4.8 would require the addition of 130,000 beds to existing accommodations. Most of these new beds would serve to augment facilities especially of those states now having insufficient accommodations. Existing institutions might be enlarged or new units could be established as local circumstances warrant.

(4) TEMPORARY (THREE YEARS) MAINTENANCE GRANTS

Attention is here directed to the financial need of newly constructed hospital accommodations of the several classes—general, mental and tuberculosis. Since most of these beds are to be placed in areas of low wealth, states and local communities might encounter some difficulty in taking over rapidly the added financial burden. A special program is therefore contemplated to provide federal grants-in-aid for the maintenance of new institutions or additional beds during the first three years of their operation.

(5) ESTIMATED COSTS FOR CONSTRUCTION

General Hospitals and Diagnostic Centers.—When computed on the basis of \$3,500 per bed, exclusive of land value, the construction costs of general hospitals, aggregating 180,000 beds, entails an outlay of not less than \$630,000,000, of which, approximately \$60,000,000 would be for rural hospitals. In remote rural areas, not readily accessible to a hospital center, provision should be made for the construction of health and diagnostic centers to serve both the practicing physicians and the public health agencies. As an initial development, not less than 500 such centers should be contemplated, entailing a gross expenditure of, roughly, \$1,500,000.

Tuberculosis Hospitals.—By assuming an average cost per bed of \$3,000, the total expenditure thus incurred for construction of 50,000 beds would be in the neighborhood of \$150,000,000.

Mental Institutions.—The erection of mental hospitals to accommodate 130,000 beds costing \$2,500 each would necessitate a total outlay of about \$325,000,000.

On the construction program as outlined, the committee recommends federal grants-in-aid equivalent to 50 per cent of the construction costs as estimated, thus entailing a total outlay of \$552,250,000 on the part of the federal government.

(6) ESTIMATED COSTS OF TEMPORARY MAINTENANCE GRANTS

Recommended federal grants are computed on a basis of \$300 per bed per annum for general and tuberculosis hospitals and \$150 for mental institutions. The aggregate for the nation as a whole is not to exceed 50 per cent of the actual patient-day costs, with curtailment stipulated at each year so as to disappear after three years.

If all the hospital construction that has been outlined were undertaken, these special maintenance grants would involve a maximum total federal cost of about \$177,000,000, distributed over a period of years beginning with the completion of the first hospital and ending three years after the completion of the last institution built under the program.

SUMMARY

The Technical Committee finds hospital accommodations and the scheme of organization ill adapted to the varying needs of people living under different social, economic, and geographic circumstances. In hospitals offering general care, the percentage of beds that must be supported through fees from patients is out of proportion to the income distribution of the population, hence many of these full-pay beds are empty a large part of

the time. Conversely, there are too few low-cost and free beds to satisfy needs; those already provided are concentrated in centers of wealth and population. Some 1,300 counties have no hospitals, another 520 contain one or more small proprietary institutions only; and 423 counties have local tax-supported facilities. In this combination of circumstances can be found reasons why the rich and the poor of large cities secure proportionately more service than those of moderate means; why rural people generally have less hospital care than those residing in large cities; and why admission of the poor to hospital beds in rural areas and the smaller towns is confined very largely to emergency surgery.

Recommendations which the Committee offers for expanding hospital accommodations together with making them more generally accessible are given numerical expression in the following summary table.

Hospital Facilities in the United States
Present Status, Needs and Costs of New Construction
in Ten Year Program

Medical Type of Hospital	Present Status			Value of Federal Grants		
	No. of Hos- pitals	No. of Beds	Beds Needed	Construc- tion	Mainte- nance 3 Year	Total
General.....	4,566	410,024	180,000	\$315,000,000	\$105,000,000	\$423,000,000
Tuberculosis...	1,042	82,591	50,000	75,000,000	30,000,000	105,000,000
Mental.....	552	531,445	130,000	162,500,000	39,000,000	201,500,000
Total.....	6,160	1,024,060	360,000	\$552,500,000	\$177,000,000	\$729,500,000
500 health and diagnostic centers.....						750,000
Total.....						\$730,250,000

Much has been said and written about free clinics, but this device is not a factor of any moment in medical care for the country as a whole; only 17 per cent of general hospitals operate outpatient departments and nearly half the service is rendered in the five largest cities having over a million inhabitants.

Tuberculosis and mental hospitals differ from general hospitals in that the preponderance of beds are supported by taxation. While existing facilities thus are available in large measure to all classes, the accommodations in most states are not sufficient for the population. Moreover, many plants are in need of modernization.

Even more than general hospitals, those of tuberculosis and mental classification have failed to develop services for ambulatory patients. Another defect of hospitals, though less tangible than physical facilities, is the failure of hospitals in so many places to become an integral part of the community program for medical service.

In another section of the Committee's report, recommendation is made for the payment of public funds to defray the cost of hospital care of medically needy persons. This, in large measure, should promote the use of unoccupied beds in existing institutions and of the beds that are to be added through the proposed construction program.

SOURCES OF MATERIAL

Hospital registers of the American Medical Association, 1928, 1930, 1932, 1934, 1936, 1938.

"Survey of Tuberculosis Hospitals and Sanatoriums in the United States," *Journal of the American Medical Association*, December 7, 1935.

Population reports of the U. S. Census Bureau.

The National Health Survey.

The 1935 Business Census of Hospitals.

MEDICAL CARE FOR THE MEDICALLY NEEDY

INTRODUCTION

The formulation of a national health program implies acceptance of the principle that the maintenance of the health of its citizens is a responsibility of government. The conservation of national health requires the provision of adequate facilities and services designed to prevent disease, and, when sickness strikes, to secure its adequate treatment; but the lack of a unified public policy creates a barrier to the achievement of this objective.

Through its local and state health departments, government has assumed responsibility for the provision of preventive health services distributed on a community-wide basis. However, as previous reports of the Technical Committee on Medical Care indicate, wide variation exists throughout the country in the practical application of this policy. A more serious situation arises from the inertia of governmental bodies in the field of medical care of the needy sick. The majority of states have laid the legal framework providing for medical care of certain groups of public charges, but the practical results obtained under this essentially permissive legislation are meager because of lack of funds necessary to implement the program. Furthermore, with the exception of a few states, no legal basis exists for the provision of medical services to the self-sustaining population above the relief level, whose financial status, precarious at best, is particularly threatened by the costs of sickness. Although there are some important exceptions, medical care remains, on the whole, "an economic commodity" which is purchased and paid for directly by the individual who needs it. The fact that this "economic commodity" is chiefly a professional service does not alter the basic fact. It therefore results that the ability of the individual to purchase medical care differs according to his economic status, and the individual with low income obtains the smallest amount of care.

PART I. THE EXISTING NEED

(1) THE MEDICALLY NEEDY POPULATION

There are in the United States today probably 40 million persons—almost one third of our population—living in families with annual incomes of less than \$800. Current studies on the cost of living indicate that this sum supports the average family of four persons only at an emergency level, and leaves a margin for the purchase of medical care at the risk of deprivation of food, clothing, shelter and other essentials equally necessary for the maintenance of minimum standards of health and decency. Included in this group, as of April 1938, is an estimated total of 11 million persons in families on work relief rolls, six million in families receiving general relief, and three million wards of the government under the Social Security Act—almost one million dependent children with their mothers, about two million recipients of old age assistance, and 55,000 dependent blind persons. This group, comprising a total of over 20 million persons, is dependent on government for food and shelter, and similarly dependent on public funds or private philanthropy for medical care. In the emergency of sickness, some 20 million persons in the marginal income class above the relief level, otherwise self sustaining, become dependent on public aid for the provision of medical care.

(2) THE CASE LOAD OF ILLNESS

Some indication of the magnitude of the problem of meeting the medical needs of the sick poor may be obtained from a consideration of the case load of illness in this group of 40 million medically needy persons. It is estimated that approximately 20 million cases of disabling illness will occur in this population during a year, of which a minimum of eight million cases will cause disability of at least a week's duration. Under the conditions prevailing in 1935, about two million of the more seriously disabling illnesses will receive no medical care; and the six million medically attended cases of this category will include over two million patients in general hospitals.

The variety of medical services required for the care of these cases is indicated by a consideration of the incidence of illness due to certain specific causes; only the more serious illnesses (disabling for a week or longer) are included in these estimates.

Over one million cases of acute infectious diseases will occur in the child population; these cases will require adequate medical care to reduce their frequently serious sequelae, needless loss of life and to prevent infection of the well. Approximately 250,000 cases of pneumonia, incident in the total population during the year, will require skilled and intensive medical and nursing care. Surgical treatment will be required by a large proportion of some 425,000 cases of tonsillitis, and 190,000 cases

of appendicitis occurring in the group. Accidental injuries will account for the disability of about 700,000 cases, of which about 250,000 will require hospital care. Approximately 175,000 persons in the group will be found with severely crippling orthopedic conditions, and the majority of these persons will be totally disabled.

The major chronic diseases of later life—cancer, rheumatism, diabetes, the cardiovascular and renal diseases—will account for some million cases of illness; and the high costs of these cases, owing to their long average duration and their special requirements for diagnosis and treatment, will tax severely the resources of low income families providing independently for their medical care. Among persons of any age, long-term invalidity creates needs for treatment and rehabilitation which must be met largely by public provision. The special problems presented by care of the tuberculous and mentally diseased have been called to the attention of the Conference in previous reports of the Technical Committee. These diseases also result in "high-cost" illnesses, which place a special burden on the poor.

(3) THE UNEVEN DISTRIBUTION OF MEDICAL FACILITIES AND PERSONNEL

Previous reports of the Technical Committee have indicated that the uneven distribution of hospitals, outpatient departments, and medical and nursing personnel, constitutes a serious defect in our national resources for the maintenance of health. In many rural areas, in which the number of physicians and nurses is low, and hospital facilities are limited, rich and poor alike encounter difficulty in obtaining adequate medical care. At the next level of adequacy, represented by small cities remote from metropolitan areas, the poor suffer the effects of limited facilities to a greater degree than the rich. With increasing urbanization, the supply of medical facilities and personnel becomes more abundant for rich and poor, and clinics, visiting nurse service, and tax-supported hospital care supplement the resources of low income families. The widespread attention given to the availability of these free medical services to the poor overlooks the fact that their benefits are largely restricted to the poor in the metropolitan areas, who comprise only part of the medically needy population. A large proportion of medically needy persons is found in small cities and rural areas, in which limited hospital facilities, restricted tax support of hospitals, and insufficient medical and nursing personnel create an additional obstacle to the receipt of adequate medical care.

(4) SICKNESS AND ECONOMIC STATUS

The restriction which inadequacy of income, coupled, in certain areas, with inadequacy of medical facilities and personnel, places on the receipt of medical care by this low income group has serious implications, arising from the fact that its medical needs exceed those of families at higher economic levels. Death rates are an index of the end results of sickness. It is, therefore, significant that the death rate is considerably higher for the poor than for the well-to-do. This is evident from general death rates examined by occupation, from infant mortality rates, from tuberculosis rates, and from mortality statistics for other important causes of death.

Though death rates reveal the annual loss of human lives, they measure only a fraction of the toll which sickness exacts. Indeed, counting only severe disabling illnesses (i. e. those lasting for one week or longer), for each death there are about sixteen illnesses that mean loss of work for the family breadwinner, inability of the housewife to go about her normal duties, or absence from school of the school child.

The association of sickness with low income has been demonstrated by numerous surveys which have taken account of economic status. The most recent data bearing on this point were obtained in the National Health Survey made in 1935-1936. Records of disabling illness and the receipt of medical care in a twelve month period were obtained for about two and a quarter million persons, of whom some 429,000 persons were members of families which had received relief during the

survey year, and an additional group of 562,000 was in families in the marginal income class above the relief level. The canvassed population was drawn from eighty-three cities and twenty-three rural areas in eighteen states, and the results thus indicate the experience of families meeting the limitations of low income under the varying environmental conditions of the Northeast, the South, the Central region, the Far West—of the large and small city, and the rural area.

The results of the survey indicated that, in large and small cities in all regions of the country, and in the rural areas, the frequency and severity of illness was uniformly higher in relief and marginal income families than in any other income class. For all urban areas, the excess in the frequency rate of sickness in the relief population, in comparison with that of the highest income class, was 62 per cent; for the marginal income class above the relief level, the excess was 23 per cent. In the relief population, the annual days of disability per capita amounted to sixteen days, in the marginal income class to twelve days; among persons in the highest income class, the rate was only seven days per capita.

Among children in relief families, the annual days of disability per capita was 17 per cent higher than the average for children among families in comfortable economic circumstances. The average aged person in families of the highest income class was disabled by illness for three and a half weeks in the survey year; among the aged in relief families, the rate was slightly over eight weeks. One in every twenty family heads in the relief population was unable to work because of chronic disability, as contrasted with only one in 250 heads of families with incomes of \$3,000 and over.

Among all surveyed relief families, the tuberculosis case rate was more than six times as high as that of families above the \$3,000 income level; among Southern relief families, the rate was ten times as high as in families of the upper income group. Illness due to the major chronic diseases of later life—cancer, rheumatism, diabetes, the cardiovascular and renal diseases—was over one and one-half times as frequent among relief families as among those in comfortable circumstances.

The illustrations of the association between sickness and poverty derived from the National Health Survey have special weight because of the size and representative nature of the population canvassed, but the results are by no means isolated or peculiar to conditions prevailing in 1935. A similar conclusion was forecast by the results of earlier investigations of more limited groups of the population. The combined evidence of numerous studies of sickness and death rates among various economic classes of the population indicates that sickness occurs more often and with greater severity among the poor than among those in moderate or comfortable economic circumstances.

(5) MEDICAL CARE AND INCOME

While sickness among the poor is more frequent in occurrence, and of greater severity, than among families in the upper economic groups, numerous surveys indicate that, notwithstanding their greater need, the poor obtain less medical care than the well-to-do. For example, a study made in the last prosperous years before the depression set in showed that well-to-do sick persons received nearly three times as many services from physicians, six times as many in each hundred received dental care, two and one-half times as many had health examinations as did self-sustaining families with incomes under \$1,200 a year. The proportion who went through a year of life without professional care was more than three times as high among the poorest as among the wealthiest families—despite services furnished to those in the lower income class without charge. The amount of general hospital care (per capita) received by low income families in this survey was approximately the same as that received by families in the highest income class. Surgical operations, however, were almost twice as frequent among persons in the well-to-do group as among the poor.

The results of the National Health Survey contribute additional evidence on the inadequacy of medical services received by the medically needy in 1935:

Hospital care in the large cities, in terms of the proportion of illnesses hospitalized, was approximately the same in amount among rich and poor, a fact explained by the relatively large supply of hospital beds supported by public funds in the metropolitan areas. In the smaller cities in which hospital facilities are less adequate, the rich maintained the proportion of hospitalized illnesses at the level of the metropolitan centers, but among relief and marginal income families, the proportion declined progressively with city size.

Medical care in the home, clinic or physician's office however is the type of service adaptable to the requirements of the majority of illnesses. Among relief and marginal income families, both the proportion of illnesses receiving such care, and the average number of consultations per case, were consistently lower than among families in comfortable circumstances in all parts of the country. Although the proportion of hospitalized illnesses among these low income families in the small cities was markedly lower than in the metropolitan areas, no compensating increase was observed in the proportion of cases receiving extra hospital medical care.

Clinic supervision provides adequate medical care for certain ambulatory cases of illness, but the concentration of outpatient facilities in the large cities greatly restricts the benefits of these services. Clinic care was received by 15 per cent of the illnesses of the canvassed relief population in the metropolitan centers, but in the small cities under 25,000 population 2 per cent, and in the rural areas only 0.2 per cent of illnesses in relief families received clinic care. While the proportion of illnesses in the relief and marginal income groups was approximately the same, 54 per cent of all cases receiving clinic care were in relief families and only 19 per cent in the marginal income group.

Bedside nursing care by a private duty nurse was received by only a small proportion of illnesses in relief families—less than 1 per cent, compared with 7 per cent among families in comfortable circumstances. Bedside nursing care provided by visiting nurses was relatively frequent in the relief group of the large cities, reaching 13 per cent of the cases; in cities of less than 100,000 population, the proportion was somewhat lower, the figure being 9 per cent. In the rural areas, only 3 per cent of the illnesses received visiting nursing care—approximately one fourth of the average for the large cities. As in the case of clinic care, a much larger proportion of visiting nurse service was absorbed by the relief group than by the marginal income class.

Dental care is notably inadequate among low income families. In one of the large cities canvassed in the National Health Survey, information was obtained on the receipt of dental care. In families of skilled, semi-skilled and unskilled workmen, the proportion of adults who had never received dental care was almost twice as high as in the families of white collar workers. In a recent survey of families in California cities, the proportion of persons requiring but not receiving dental treatment was four times as high in families of the lowest income class as among the well-to-do.

The effect of the inadequacy of medical care among the poor assumes greater significance when considered in relation to certain groups of the population, or to particular diseases in which mortality is high or disability is severe. Among children under 15 years of age the disparity in medical attendance of illness at various income levels was found to be even greater than among adults, and, although apparent in all areas, was particularly marked in the South. In the small cities of the South, about one sixth of the deliveries to white women, and almost one half of the deliveries to Negro women in families with income under \$1,000 took place without the attendance of a physician. The average case of illness attended by a physician among aged persons in families in comfortable circumstances received almost twice as much care, exclusive of hospital treatment, as the average case among aged persons on relief.

Among Negro families in the relief and marginal income groups in the South, the average length of hospital stay per patient with tuberculosis was ninety-four days, compared with 159 days for the average hospitalized case in white families of this class in the South and 174 days for the Northeast. In the large cities the proportion of cases of certain chronic diseases—cancer, rheumatism, diabetes, the cardiovascular-renal diseases—receiving hospital care was approximately the same among rich and poor, being somewhat higher for relief families, however, than for the marginal income class. In the small cities, except in the East, the inadequacy of hospital facilities resulted in a marked reduction in the proportion of these chronic cases hospitalized in low income families, but families in comfortable circumstances maintained about the same proportion as in the large cities.

The point should be emphasized that measurement of the amount of medical services received by the poor suffers no distortion by comparison with the services received by those in comfortable economic circumstances, since the well-to-do

themselves on the average do not obtain care which is adequate in comparison with professional standards. Thus, in a recent study it was found that families in the class with annual income between \$5,000 and \$10,000 received only two thirds as many services from physicians, only three fifths as many days of general hospital care, and less than one half as much dental care as professional opinion considered necessary on the basis of their expected illness rates.

The findings of the National Health Survey and of earlier representative studies therefore provide quantitative support for the generally recognized fact that the receipt of medical care depends largely on income, and that people of small means, or none at all, though having the greatest need for care, receive, on the whole, the least service.

(6) PRESENT FINANCIAL BASIS OF PUBLIC MEDICAL CARE

The group of some 20 million persons without income, dependent on public support for general living, is similarly dependent on public funds, or philanthropy, to meet its costs of medical care in sickness. To what extent, then, does government contribute to the support of medical services for this group? In 1935, expenditures from governmental funds for health and medical services amounted to about one sixth of the total medical bill in that year, or approximately \$520,000,000. Of this amount, approximately \$72,000,000 was used for hospital care of patients in federal institutions. About \$157,000,000 was absorbed by hospital care of the tuberculous and the mentally diseased. Expenditures for general hospital care (including special hospitals, except tuberculosis and mental hospitals) amounted to about \$105,000,000, representing an expenditure of approximately \$75,000,000 for care given in governmental hospitals and \$30,000,000 for care of medically needy persons in nongovernmental hospitals. The national hospital and public welfare associations have recently agreed upon policies whereby the use of public funds for care of the medically needy in nongovernmental hospitals will be made most effective.

Included in the total of \$520,000,000 is approximately \$130,000,000 used for the support of the public health services provided by local and state health departments. The exact amount of governmental expenditures for medical care of the sick poor, exclusive of hospital care, is not known, but is estimated to be about \$25,000,000.

Excluding governmental support of hospital care in federal institutions, and hospital care of the tuberculous and mentally diseased, total expenditures for tax-supported medical care amount to some \$130,000,000 annually. This sum, however, is drawn upon to support care not only of the medically needy population as here defined, but of other persons with income somewhat above the marginal level. There is, furthermore, uneven distribution of these governmental funds, some states and communities, in particular, the large cities, spending very much more than others in proportion to their total, or medically needy, population.

The inadequacy of this expenditure for tax-supported medical care—roughly \$130,000,000 annually—is emphasized by its comparison with the estimated cost of supplying essential medical services at an emergency level to the medically needy, which would amount to about \$400,000,000 annually. This sum would provide only a minimum amount of medical care; a volume of medical service consistent with professional standards of adequacy secured by individual purchase on a standard fee basis would entail costs of approximately five times this amount.

It is apparent, therefore, that the handicap of insufficient funds severely limits the ability of public welfare agencies to meet the medical needs of the public assistance group. The effective distribution of public medical care is further impeded by lack of established procedures in its administration. Welfare officials have become increasingly concerned by the problems arising in connection with the provision of adequate medical care to the sick poor. A recent report of the American Public Welfare Association presents the results of an analysis of these problems based on the experience of welfare officials throughout the country. The report indicates that the present administration of public medical care is characterized by division, over-

lapping and duplication of authority, lack of a satisfactory policy for the determination of eligibility for care, and insufficiency and low standards of medical service.

For medical care of the group of some 20 million persons in self-sustaining families above the relief level, the present policy of public welfare agencies is casual and uneven. Expenditures for even minimum medical services constitute a serious burden for these families living at the emergency level, and a high-cost illness necessitates adjustments in the budget which endanger standards of health. If serious sickness strikes the breadwinner, the costs of medical care, combined with the loss of wages resulting from a protracted period of disability, frequently places the family in the dependent class.

PART II. THE COMMITTEE'S RECOMMENDATIONS

The foregoing evidence points clearly to the need for further public financing of medical care for the group of medically needy persons who are unable from their own resources to pay the costs of care on any basis. In many communities and some whole states, local fiscal capacity is insufficient to support adequate public medical care without the aid of federal funds. The charity of private physicians and the resources of voluntary institutions are inadequate to meet the demands of this group for medical care. The Technical Committee therefore believes that some plan of financial cooperation between the state and federal governments is necessary to secure adequate medical care of the medically needy population, and submits the following recommendation:

RECOMMENDATION III: FEDERAL GRANTS-IN-AID TO THE STATES TOWARD THE COSTS OF A MEDICAL CARE PROGRAM FOR RECIPIENTS OF PUBLIC ASSISTANCE AND OTHER MEDICALLY NEEDY PERSONS

It is proposed that the federal government, through grants-in-aid to the states, implement the provision of public medical care to two broad groups of the population: (1) to those for whom the state and federal governments, jointly or singly, have already accepted some responsibility through the public assistance provisions of the Social Security Act, through the work relief program or through provision of general relief; (2) to those who, though able to obtain food, shelter and clothing from their own resources, are unable to procure necessary medical care.

The program would be developed around and would be based on the existing preventive health services. It would be in addition to the programs and costs involved in recommendations I and II but would need to be closely related with the services provided under those recommendations. The program contemplated in the present recommendation would provide medical services on the basis of minimum essential needs. It would include medical and surgical care, with necessary diagnostic services, medicine and appliances; hospitalization, exclusive of the period of maternity, and of care of the tuberculous and mentally diseased; bedside nursing care, and emergency dental care.

The use of nongovernmental hospital beds for medically needy persons paid for on a proper basis by public funds is presumed as a part of this program wherever local conditions render this policy necessary or expedient. It is taken for granted that the medical and allied professions and institutions will participate in the administration of this program as has been the case in many states and communities.

(1) SIZE OF THE POPULATION TO BE SERVED

In the previous discussion, the medically needy population has been estimated to include some 40 million persons. At the present time this figure includes only the public assistance group, and persons in families with annual incomes under \$800, providing a standard of living at the emergency level, on the basis of recent studies of costs of living. While the adoption of an annual income of \$800 or less as a basis for determining the estimated number of the medically needy is somewhat arbitrary, the size of the population to be served has been estimated on this basis, and the costs of the recommended program determined

with reference to a total of 40 million persons. For future planning, it would be desirable to extend the definition of the medically needy to include families up to the \$1,000 level. Local estimates of the medically needy population will necessarily take into account regional variation in costs of living.

(2) COSTS OF THE RECOMMENDED PROGRAM

The annual minimum cost of such essential medical services, hospitalization as specified, and emergency dentistry has been estimated at \$10 per person in the population served. Applied to the 40 million persons, including recipients of public assistance and other medically needy persons, the total annual cost would be \$400,000,000. Of this amount, the proposed federal contribution might amount on the average to 50 per cent, or \$200,000,000, to be matched on the average by an equal contribution from the states. Total expenditures, including federal, state and local contributions, might amount, in the first year, to \$50,000,000, in the fifth year to \$150,000,000. While it is estimated that the maximum annual expenditure would not be attained before the tenth year, a more rapid rate of development would bring the program to maturity at an earlier date.

It must be emphasized that the estimate of \$10 per person per year for the cost of providing medical care to the medically needy is based on a consideration of minimum medical needs. Adequate care, exclusive of dentistry, might cost more than twice this amount. Although a minimum estimate, the recommended figure probably exceeds the per capita expenditure for public medical care made by any state at the present time, and is several times higher than the present average expenditure for this group in the country. It must be recalled also that this amount is supplemental to the preventive services already supplied by organized health agencies, and that it will be augmented by the provisions of recommendation I-A for expanded public health services including control of tuberculosis, mental disease, cancer, venereal disease, pneumonia, malaria and the industrial hygiene program, and by the provisions of recommendation I-B for expansion of maternal and child health services, if this recommendation be adopted.

It should be noted that this program is exclusive of the provisions for maternity care presented in recommendation I-B, but includes its provisions for medical care of children. If the present recommendation be adopted, it would therefore cover the costs of the special program for children presented in recommendation I-B.

(3) METHOD OF ALLOCATING GRANTS

Since fiscal capacity, and the availability of medical facilities and personnel vary from region to region, it is proposed that the \$200,000,000 federal contribution be allocated to the states on a basis which takes account of two factors: (1) the number of the population in each state which is dependent or otherwise medically needy; (2) the financial status and resources of the state. It is assumed that the states themselves will take into account the wide variation in needs and resources among different areas within their own boundaries. Primary administrative and operative responsibilities would rest with the state governments. Eligibility for federal grants-in-aid would depend on the meeting of certain minimum conditions regarding the service to be rendered to dependent and other medically needy persons and on provision of funds by the states for their share of the costs.

SUMMARY

In the United States today there are probably 40 million persons in families with income supporting only an emergency standard of living. Some 20 million persons in this group are in families without private income, dependent on public funds for food and shelter, and likewise dependent on public aid or philanthropy for medical care in sickness. For the additional group of 20 million persons in self-sustaining families of the marginal income class, individual income is insufficient to meet the costs of sickness without serious curtailment of expenditures for food, shelter and other essentials equally necessary for the maintenance of minimum standards of health and decency. A

large proportion of the needy population lives in small cities and rural areas in which limited hospital facilities and medical and nursing personnel create an additional obstacle to the receipt of adequate medical care.

While the death rate is higher and sickness more frequent and severe among the poor than among those in comfortable circumstances, the evidence of numerous studies indicates that the poor, on the whole, receive less medical care than the well-to-do. The present system of public medical care offers no satisfactory solution for the problem of providing adequate care to the medically needy. Its restricted legal basis permits care chiefly to general relief clients, providing unevenly for other recipients of public assistance, and recognizing only to a limited degree the needs of otherwise self-supporting persons whose private income is insufficient to meet the costs of medical care. The practical operation of the system is further impeded by lack of funds, overlapping of authority, and insufficiency and poor standards of medical service. The Technical Committee therefore believes that the medical needs of this large group of the population can be met only by a program of federal-state cooperation providing the additional public funds necessary to support minimum medical services.

The success of the program will depend on the full cooperation of physicians and others involved in giving medical services, of public and private hospitals and clinics, of health departments and welfare agencies. No one plan will meet the diverse needs of the states, and considerable latitude must be allowed in the details of state and local programs. But the problems of executing the program must not be permitted to obscure the need for federal aid in securing to these needy citizens their rights to health.

REPORT
of the
TECHNICAL COMMITTEE ON MEDICAL CARE
to the
NATIONAL HEALTH CONFERENCE
SESSION V

Tuesday Evening, July 19—8 p. m.

Arthur J. Altmeyer—*Chairman*

A. A General Program of Medical Care

B. Insurance against Loss of Wages during Sickness

—Presented by I. S. Falk

Social Security Board

Discussion

A. A GENERAL PROGRAM OF MEDICAL
CARE

INTRODUCTION

The Technical Committee on Medical Care has called attention to the notable advances made in recent years in the prevention and cure of disease. The Committee has also called attention to the fact that there are serious inadequacies in the health services of the nation. In the report transmitted by the Interdepartmental Committee to the President in February, the existing deficiencies were summarized in four broad categories. Of these, the Conference has already considered three:

- (1) Expansion of public health, and maternal and child health services;
- (2) Expansion of hospital, clinic, and other institutional facilities; and
- (3) Provision for the medical services of needy and of medically needy persons.

Attention may now be directed to the fourth major problem: *the financial burdens and the economic insecurity which sickness creates for self-supporting persons.*

PART I. SICKNESS BURDENS OF SELF-SUPPORTING
PERSONS

When outlining a national health program, the Committee placed first emphasis on prevention of disease. Recognizing the importance of private medical practice, of hospitals, clinics,

sanatoriums, health departments, and other institutions and agencies for the provision of modern medical service, the Committee has recommended a program to meet existing deficiencies.

Preventive services and hospital facilities are necessary, but of themselves they are not sufficient. A large proportion of illness is not yet preventable. Only a fraction of all illnesses requires hospitalization—though many more cases require or can profit from organized clinic service. But regardless of the number, distribution, technical proficiency and quality of services available from hospitals, clinics, dispensaries, sanatoriums, physicians, dentists and nurses, these services are of no direct benefit to persons who do not use them. Society must not only have an armament against disease but must also see that it is effectively utilized. Between the individuals or institutions equipped to serve the sick and the millions of people in need of their services stand barriers, the most important of which is an economic wall which both groups are anxious to scale.

The costs of medical care—including in this phrase the costs of services furnished by physicians, dentists, nurses, hospitals and laboratories—must be brought within the means of the public. Furthermore, insecurity and dependency created by loss of earnings during periods of disability must be reduced as far as available means permit. If a national health program is to bring health security to the population, it must include provision against the burdens created by medical costs and by loss of earnings during periods of disability.

(1) TOTAL COSTS AND PRIVATE EXPENDITURES

The purchase of medical services is still mainly a matter of private and individual action. Though government (federal, state and local) spends considerable sums, and though organized groups pay an important part of the nation's bill for sickness, the individual patient still carries the principal share of the costs through private payments.

In 1929, the total expenditures in the United States for all kinds of health and sickness services were about \$3,700,000,000, of which patients paid 79 per cent and government 14 per cent. Philanthropy and industry accounted for the remaining 7 per cent. In 1936 the total expenditure had declined to \$3,200,000,000, of which patients paid 80 per cent and government 16 per cent. In 1937 and in the current year, government expenditures have probably further increased, offsetting reductions in expenditures by philanthropy and industry; but private and individual expenditures still remain approximately 80 per cent of the total.

(2) INCOME AND HEALTH NEEDS

If medical services are to be effective, they must be geared to need. The need for community-wide preventive services is substantially uniform among all classes of people; but the need for individual services is not.

The association of sickness with low income has been demonstrated by numerous surveys which have taken account of economic status. By way of illustration, we may cite a survey among representative white families in many communities of the United States during the years 1928-1931. It was found that in families with annual incomes of \$3,000 and more, there were 3.8 days of disability a year for each person; in families with incomes under \$1,200 a year, there were 8.9 days of disability a year per person.¹

A comprehensive review of the statistics on sickness and poverty would try your patience. Every substantial sickness survey, whether in urban or in rural communities, whether made by government, by philanthropy or by business concerns, serves only to furnish additional proofs that sickness and disability are more prevalent among people of small means than those who are in better economic circumstances. This is the basis for the conclusion that the poor and those in low income classes need more medical care than the well-to-do or the wealthy.

1. The Incidence of Illness and the Receipt and Costs of Medical Care Among Representative Family Groups, by I. S. Falk, M. C. Klem and N. Sinai (Chicago, 1933). Also: The State of the Nation's Health, by G. St. J. Perrot, *Ann. Amer. Acad. Pol. and Social Sci.*, (Nov. 1936), p. 141.

(3) INCOME AND RECEIPT OF CARE

The higher sickness rates that prevail among people with small incomes might lead one to assume that they would receive more medical services than those in better circumstances. But the contrary is the fact. Either those in the lower income classes get too little care or those in the upper income classes get too much. A study of this point showed that the well-to-do were not, in general, receiving too much service as judged by professional standards.² The only alternative conclusion possible is: The poor receive too little.

Studies of this kind do not show merely a special contrast between the poor at one extreme and the wealthy at the other. On the contrary, they show a more or less regular gradation from the lowest to the highest income groups. The large majority of the population which falls between the income extremes shows the same phenomenon; they receive medical care not according to their need but according to their income level. For an overwhelming majority of the entire population and for an even larger proportion of self-supporting persons, medical care must be purchased privately, and the frequency of purchase depends largely upon the purchase price.

(4) UNEVEN BURDEN OF MEDICAL COSTS

Why do self-sustaining people with low incomes receive inadequate care? The first basic reason is found in the irregular and unpredictable occurrence of illness and of sickness costs.

Families spend, on the average, 4 to 5 per cent of income for medical care, the proportion being fairly constant up to an annual family income of \$5,000, beyond which it tends to decline slightly. These average figures do not, however, give a realistic picture of the burden created by medical costs. The need for medical care by a family is uneven and unpredictable. In one year, little medical service or none may be required; in another year, the family may suffer one or more severe illnesses among its members and may require medical service costing large amounts. No particular family knows any month or any year whether it will be among the fortunate or among the unfortunate. When serious illness comes, it may bring large costs and may descend with catastrophic force on the current budget, on savings, on freedom from debt, or the economic independence of the family. Every substantial study of medical costs shows that they are burdensome more because of their uncertainty and variability than because of their average amount. And this is equally true for the urban family of the industrial wage earner and for the rural family of the farmer or farm laborer.

Nor do the statistics of actual family expenditures tell the whole story. Knowing in advance that they cannot pay large medical bills, many families ask for "free" care, and many go without medical attention. Nor is it difficult to picture the distress of those families which incur large bills and undertake to pay them. In one case or another, the savings of a lifetime may be wiped out, the hopes and dreams for a home or farm thwarted, educational opportunities sacrificed, the family deprived of those things which make life pleasant and living worth while. Nor do the statistics leave any doubt why physicians and hospitals have difficulty in collecting their bills. Is all this necessary or inevitable? Is there no remedy? Is our system of providing, buying, or paying for medical care the best that can be devised to meet our present needs?

The burden of sickness costs is mitigated in some measure by the arrangements whereby fees are adjusted to ability to pay. But the sliding scale operates only in limited ways and is open to very serious abuses. Though free and part-pay services and facilities have been extensively developed, especially in the large cities, though physicians give generously of their services, and though governments have greatly increased tax support for services furnished to the poor, the fact remains that large costs still fall on small purses.

(5) MEDICAL NEED AND ABILITY TO PAY FOR ADEQUATE CARE

The uneven burden of medical costs is the first cause of inadequate care; there is a second cause of great importance. A

considerable proportion of the population is too poor to be able to pay, through their own resources, the full cost of adequate care. The increasing cost of good care, the more extensive public demand for it, and the strengthened determination of society to conserve the health of the people join in the creation of a new class of persons. These are people who may be self-supporting and independent for all their other basic needs but who are unable to afford the costs of necessary medical care.

The problem created by the irregular incidence of illness and of medical costs cannot be solved by an increase in average family income. If the national productivity were in some way doubled and every one's income were correspondingly increased, the medical care problem of self-supporting people with doubled income would be alleviated somewhat, but would be far from eradicated.

Recent studies³ provide a basis for estimating the cost of adequate medical care as defined by competent professional judgment. If purchased on an individual basis for minimum fees, such care (exclusive of the costs of community services, dentistry, medicines, or appliances) would cost, on the average, about \$76 per person a year or about \$310 for a family of average size. Obviously, such expenditures for medical care would be possible for the great majority of all families only with extraordinary adjustments in the distribution of income, in budgets and in standards of living.

Alternatively, the cost of adequate care may be estimated crudely on the assumption that care is purchased by groups rather than by individuals. From the experience of various organized medical service and insurance plans, about \$17.50 per person a year appears to be a reasonable minimum estimate of the cost of furnishing adequate care, exclusive of dentistry. Adequate dental care would cost at least an additional \$7.50 per person a year. This gives \$25 per person or \$100 for a family of four as an estimated minimum cost of adequate care purchased collectively by groups rather than by individuals. Expenditures of this amount would mean approximately doubling the average sum spent by families at the \$1,000 income level, adding one third for families with \$1,500 a year and one fifth for families with \$2,000 a year. Families with \$2,000 a year or less represent, in different years, about 60-80 per cent of all the families of the nation. Self-sustaining families with less than \$1,000 a year and those whose incomes must be supplemented would have to be aided even more. Families with incomes of \$3,000 and more spend more than \$100 a year for medical care.

The conclusion is inescapable that considerable proportions of the nation's families are too poor to afford the cost of adequate medical care from their own resources. If they are to receive such care, some part of the cost must be borne by the more prosperous. This is not a new principle; it has long been practiced in the payment for medical care, and the medical profession has always insisted that people should pay for medical care in proportion to ability to pay.

Sickness has become a hazard like death or unemployment in that it entails losses which may be greater than the individual can meet unaided from his own resources. The need for food, shelter and clothing can be budgeted by the individual family; sickness costs can be budgeted only by a large group. If medical care is to be made available to all families with small or modest incomes at costs they can afford, the costs must be spread among groups of people and over periods of time. Some arrangement must be worked out whereby individuals will make regular periodic contributions into a common fund out of which the costs of medical care will be defrayed for those who are sick. Thus, in each year the majority who require little or no medical care will help pay the bills of the minority who happen to need much medical care. One year, some will be the fortunate ones, will have small sickness needs, and another year they may be among the unfortunate and so need the help of others.

2. Falk, Klem, and Sinai,² pp. 118-140; *The Fundamentals of Good Medical Care*, by R. I. Lee, L. W. Jones and B. Jones, (Chicago, 1933).

3. Lee, Jones, and Jones,² *The Costs of Adequate Medical Care*, 1: S. Bradbury, (Chicago, 1937).

(6) INCOMES OF PRACTITIONERS AND INSTITUTIONS

The inadequate incomes earned by many professional practitioners deserve careful consideration. The uneven burden of medical costs on individuals and families has its counterpart in the uneven distribution of income among the physicians, dentists and nurses who minister to them. Even in the prosperous year 1929, for every physician who earned more than \$10,000 as an annual net income from his professional practice there were two who earned less than \$2,500. For every dentist who earned more than \$10,000 there were four who earned less than \$2,500. This was the unhappy state of affairs in a peak year of prosperity. Since then, the economic status of doctors, dentists and nurses has been much worse.

Inadequacies in the receipt of medical care are reflected in inadequacies in the incomes of practitioners and hospitals. While doctors are only partly occupied, while nurses suffer from substantial unemployment, and while hospital beds stand empty, millions of persons in need of service do not receive it. It is significant to record the fact that every sound arrangement to reduce the burdens created by variable sickness costs for the public operates to stabilize and increase the incomes of those who furnish the services.

(7) INADEQUACY OF VOLUNTARY INSURANCE

A brief reference may be made to the long and complex history of voluntary efforts to solve the problem of sickness costs which are unequal, unpredictable and unbudgetable for individuals or families. The group payment of sickness costs is not a new concept but an old and well established practice. Organized charity, the sliding scale of medical fees, commercial insurance, and other devices have long been practiced to reduce the burdens of sickness costs and to distribute these costs among groups of people. They have not been and they are not adequate to deal with the problem.

Group payment through nonprofit insurance has become a more important practice. Most commonly the group has been made up of employees of a single industry, handed in a "mutual benefit" or similar association. Usually, the employer and the insured persons share the costs. Some of these plans provide only medical benefits, many provide only cash benefits, and a few provide both.

Group payment has recently received a strong impetus through the development of nonprofit community associations for insurance against hospital costs ("group hospitalization"). In a number of communities, group hospitalization authorities are studying the possibility of expanding the program to include not only hospital bills but physicians' fees and other costs as well.

These and other efforts to solve the problems of sickness costs deserve high commendation. The proof of their value, however, is not their good intentions but their actual accomplishments in achieving coverage. Voluntary sickness insurance without subsidy or other encouragement through official action may be important as a method of experimentation with the technical and social problems of group payment, but it has nowhere shown the possibility of reaching more than a small fraction of those who need its protection. After decades of effort, about two million persons in the United States receive comprehensive or even substantial medical care through voluntary insurance arrangements, and one and a half million persons (some of them the same persons) are members of so-called "approved" nonprofit hospital insurance associations. In the face of needs which are vital and urgent for at least 100 million persons in the United States, the Technical Committee on Medical Care cannot find the answer to the nation's problem in voluntary insurance efforts.

PART II. THE COMMITTEE'S RECOMMENDATION

The Technical Committee on Medical Care has reached the conclusion that government must assume larger responsibilities than it has carried in the past if it is to help self-supporting people meet the problems of medical costs.

A program to provide a rational basis for the financing of medical costs cannot start in a vacuum; it must take account of existing customs, facilities and practices. Wide variations in existing personnel, institutions and economic conditions require that a national program must be flexible and must be adaptable to diverse social and economic conditions in different areas of the country. The program must aim at the eradication of socially undesirable differences, but it must recognize that this can be effected only over a period of years. Such considerations lead the Committee to the conclusion that effective operating programs should preferably be designed and administered on a state-wide basis. On this basis, the role of the federal government should be principally to give financial and technical aid to the states in their development of sound programs. Accordingly, the Technical Committee on Medical Care submits as its fourth recommendation:

RECOMMENDATION IV: FEDERAL GRANTS-IN-AID TO THE STATES TOWARD THE COSTS OF A MORE GENERAL MEDICAL CARE PROGRAM

The implications of this recommendation may first be examined in respect to programs which may be developed at the state level. If effective medical services are to become a reality, people of small means must be able to obtain these services without facing the costs at the time the services are needed. The costs can be distributed among groups of people and over periods of time through the use of taxation, or through insurance, or through a combination of the two.

(1) EXPANSION OF PUBLIC MEDICAL SERVICES IN THE STATES

It has been pointed out above that tax-supported public medical services already involve annual expenditures of about \$500,000,000 to \$600,000,000. The use of tax funds to pay for medical services is, of course, a very old method of distributing the costs. The principle of distribution is, however, applied in an extreme fashion, because, in general, public medical services are available to needy and, more recently, to medically needy persons and not to other taxpayers who provide the funds. A more general program, which would meet the needs of a larger proportion of the population to whom medical costs are burdensome, could be developed through expansion of existing public medical services, provided such services were made more generally available to the population.

Existing public medical services are, broadly considered, of two kinds: (1) general services for the needy and (2) limited classes or categories of service for special groups in the population. The scope of services for the needy is well known, and the deficiencies are widely recognized. The categorical services are usually highly specialized; they include services which state and local governments have developed for persons afflicted with diseases infused with an element of public danger (*e. g.* the acute communicable diseases) or with diseases which, being long continued or chronic, or involving highly specialized care, create costs which are beyond the ability of individual families to meet (*e. g.* cancer, infantile paralysis), or which, for lack of care, precipitate dependency and large social burdens (*e. g.* tuberculosis, mental diseases).

The expansion of public medical services can be effected—as some think they should—through this categorical approach. On this basis, government would make particular kinds of services available to the public, some only to the needy, some to the medically needy, and some to wholly self-supporting persons or to the entire community. Some of the possibilities in these directions have already been discussed at this Conference; only their expansion to all or most income groups is involved here.

It is fitting to note two objections against the expansion of public medical services through this categorical approach. First, each limited development brings additional administrative and organizational complications because of the diversity of the separate services that are made available, and because of the gaps that remain between them and also between them and privately purchased services. In many of our cities today, the complexity of these categorical services already defies the understanding of

even the expert, and much evidence shows the confusion in the public mind concerning what is and what is not available, who is and who is not eligible. Second, the limitation of particular services to particular groups in the population piles up further complexities because of the necessity of investigating the financial status of the person who needs the care. People who are self sustaining for the other necessities of life have profound objections against a means test for medical services, whether this means test is administered by a government agency, by a social worker or by a private medical practitioner.

If functional arrangements are to be simplified rather than be made more complex, if medical care is to become available without a means test for those who need service, if the public is to have ready access to these services, it seems essential to contemplate expansion of public medical services as a general program and not through a categorical approach. Such a program would produce a close similarity between public medical care and public education.

Medical care in the United States now costs approximately three and a quarter billion dollars a year. Subtracting the amount already being spent by governments (federal, state and local), a general program of public medical care for the nation would require about two and three quarters billions a year. A limited program of public medical services could be designed to cost considerably less; the services could be of less than complete scope; or—despite obvious objections—they could be restricted to people in the lower income levels; or, as has been done in recommendation III previously discussed (medical care for needy and medically needy persons), they could be limited in both respects. In any case, a program of sufficient size and scope to come to real grips with the national needs must involve new tax expenditures involving between one and three billion dollars a year. These sums include the expenditures that would be involved in carrying out recommendation III, which calls for an outlay of about 400 million dollars. The possibilities in this direction deserve careful exploration, with special regard for the forms of taxation which may be feasible to raise the necessary funds.

It should be emphasized that the new tax funds for public medical services would not represent a new kind of expenditure by the population; most of these sums are already being spent from private funds. The essential change would be to effect a wider distribution of medical costs by changing the method of payment.

(2) DEVELOPMENT OF HEALTH INSURANCE BY THE STATES

The raising of the funds required to finance a program of public medical services through general revenue taxation may be expected to present some difficulties. A general program of medical care can also be financed through insurance contributions. Health insurance designed to provide adequate care could be financed principally by direct, earmarked contributions. Like public medical care, health insurance is a method of budgeting expenditure so that each family carries a budgeted rather than, as at present, a variable and uncertain risk. As is shown by large experience, the insurance procedure is entirely compatible with freedom of all practitioners to participate in the plan, with free choice of physician by the patient, and with wide latitude left to physicians as to the method of their remuneration.

Health insurance by itself is limited in its capacities to reach all who need its protection in much the same way as are other social insurance schemes. National coverage of all persons, or of all with earnings below a specified income level, may be difficult to effect; self-employed persons, domestic servants and farm laborers cannot be easily brought within the plan because of the anticipated difficulty of collecting regular contributions from them. However, experience with compulsory systems abroad, and with voluntary systems in the United States as well as in other countries, indicates that these difficulties are not insuperable, especially if insurance contributions are combined with general taxation or special assessments.

A health insurance system might properly be limited to individuals under a specified income level (e. g. \$3,000 a year) or might cover all persons in specified employment groups through

contributions levied on income up to, say, \$3,000 a year. In order that the establishment of an insurance system should not lead to one program for the purchase of medical care for insured gainfully employed persons and another for noninsured dependent groups, the system should make provision for the inclusion of persons without income through contributions on their behalf from public funds. Thus, tax payments would be used jointly with insurance contributions to support a unified scheme for self-supporting and needy persons. The insurance benefits of this system should be distinguished from insurance against wage loss which will be discussed separately. Under such a general system to meet medical costs, medical need might disappear if contributions were related to income.

A comprehensive system of health insurance nationally developed would call for total funds equal to 4 or 4.5 per cent of income of the covered population. The major portion of these funds should be obtained from the direct contributions of insured persons, with assistance from employers and from government.

The costs of health insurance do not represent new expenditures; inasmuch as the over-all cost is estimated to be substantially what is already being spent by individuals, health insurance would be primarily a method of substituting average for variable costs. Only to the extent that part of the cost is placed on employers or is shifted to government and is not in turn shifted back to the insured persons is the impact of medical costs changed from its present pattern.

(3) STATE CHOICE OF PROGRAM

A choice between public medical service and health insurance involves many alternative considerations. Public medical service is potentially applicable to whole areas and to entire populations; it can be used wherever the taxing power of government reaches. Health insurance is somewhat more easily applicable to industrial than to agricultural areas, though this limitation is by no means an absolute one.

The two procedures are not mutually exclusive alternatives. On the contrary, each may have substantial advantages for particular areas or for particular portions of the population to be served. Experience in many countries suggests health insurance for urban and industrial areas and public medical services for rural and agricultural areas. In countries where health insurance is widely practiced, it is always supplemented by public medical provisions, even in urban areas. For example, it is common to find hospital service largely financed through tax funds and serving nearly all the population in countries with extensive systems of health insurance. The relative usefulness of either method by any state would depend on the characteristics and the composition of the state. One state, more highly industrialized and urbanized than another, may find the insurance technic generally or extensively applicable. Another state, more generally agricultural and rural, may find the method of payment through taxation or special assessment more widely useful. The choice of method or combination of methods should, in the opinion of the Technical Committee on Medical Care, be made by the states rather than by the federal government.

When making decision as to the program to be developed, many states would need to give careful consideration to the unequal financial resources of areas within the state. The same kind of public policy that is the basis for federal aid to the states dictates state aid for underprivileged areas within the state.

Federal aid to assist the states in the development of sound programs should be equally available to the states for the development of public medical services, health insurance, or a combination of the two. Recommendation IV should therefore be understood to mean that federal grants-in-aid to the states should be available within reasonably wide limitations as to the procedure, categories of services or of population groups which a state may decide to assist. Federal grants-in-aid should be geared to approved classes of expenditures under a state program rather than to the administrative or financial techniques used by the state.

It is scarcely necessary to emphasize that the development of a sound state program for medical care need not wait, in states where financial resources are adequate, on the availability of federal aid.

(4) AN ESTIMATE OF FEDERAL COSTS

The cost to the federal government of a program developed under recommendation IV cannot be estimated closely until the essential features of the plan are determined. Furthermore, a complete program could be attained only after some years of development. Account must be taken of (a) The rate at which states would be prepared to develop programs, (b) their ability to cover the populations which should be protected by health insurance or by public medical services and (c) their ability to develop effective distribution of professional personnel, hospitals and other facilities in areas where these are now deficient.

A rough estimate of the federal cost might be made only to indicate its order of magnitude. The over-all cost of services to be furnished through health insurance or analogous public medical services, or both, may be estimated to be about \$2,600,000,000 a year, assuming a theoretical population coverage of 130,000,000 persons⁴ and provision of such services as could, on the average, be furnished for \$20 per person.⁵ This would be the eventual cost for complete, national coverage. If one tenth of the total might be made effective in the first year and the federal share of the cost were assumed to be something between a minimum of one fifth and a maximum of one third of the total involved in furnishing services, the federal cost at the outset might fall between \$52,000,000 and \$87,000,000 a year. The growth of the state systems would occur through expansion of the population covered and through increasing completeness in the variety of services furnished. If the grants-in-aid continue to be necessary, the annual federal cost would presumably increase ten fold in perhaps ten years, reaching an eventual maximum falling between one fifth and one third of the two and six-tenths billion dollars over-all cost.

These estimates of federal cost include (and duplicate) several items arising out of preceding recommendations: they include considerable portions of recommendations IA and IB for the expansion of public health, maternal and child welfare services and all the cost involved in recommendation III dealing with grants-in-aid toward medical care for needy and medically needy persons. Recommendation IV proposes a more general program which embraces the more limited programs submitted in recommendations II and III.

Development of public medical services and health insurance through federal aid such as is suggested might not be as rapid as may be desired. If this is a meritorious objection to the grants-in-aid plan, more rapid development can be effected through a uniform payroll tax (with a tax-offset arrangement) as in unemployment compensation.

B. INSURANCE AGAINST LOSS OF WAGES DURING SICKNESS

We have already pointed out that sickness brings economic burdens not only because medical services involve costs but also because disability of the wage earner leads to wage loss. Loss of income in turn makes the purchase of medical services all the more difficult.

PART I. THE INCIDENCE OF DISABILITY

(1) TOTAL AND AVERAGE INCIDENCE OF DISABILITY

On the average day of the year, there are probably at least five to six million persons who are temporarily or permanently disabled by illness. These persons are unable to work, to attend school, or to pursue their other customary activities.

Among gainful workers, the rate of disability varies considerably, depending on age, sex, economic level, occupation, and so on. Taken by and large there are probably between seven and ten days of disability per person a year among the gainfully employed, but the figures range from as little as three or four

days up to fifteen or more days a year per person for different groups in the population. These figures understate the incidence of disability because they do not fully take account of those who have fallen out of gainful employment by reason of long-continued disability.

If all our gainful workers were employed and earning an average wage of \$4 or \$5 a day, a disability rate of nine working days a year would mean that disability wage loss would amount to \$36 or \$45 per person a year. A more conservative estimate may be based on the assumption that those who are gainfully employed suffer an average disability of about seven working days a year. For a period like the year 1929, the wage loss due to disability was nearly two billion dollars; for a period like the present, when there is widespread unemployment, it would be at least one or one and a half billion dollars. These figures take no account of the larger losses to industry and to society generally.

(2) UNEVEN INCIDENCE OF DISABILITY

Stating the wage loss from disability in terms of averages or of total costs is significant but also somewhat misleading—just as average or total costs for medical care may be misleading. If each worker had the average annual disability and the average annual loss of earnings, we should not have a problem worthy of extended discussion. Unfortunately, a wage earner does not suffer average illness or average loss, except by chance. Disabling illnesses are not all of seven, eight or nine days' duration. On the contrary, disabling illness ranges from less than a day to the entire year, and in some cases the disability is permanent. Whether an illness will be mild and nondisabling, or severe and disabling; whether disability will last a day, a week, a month, a year, or the remainder of the individual's lifetime depends on many factors which in general cannot be foreseen or predicted by or for the individual. Though we can forecast with substantial accuracy what will happen in a large group of workers, the individual cannot know in advance what will happen to him. This is the essential reason why the averages are misleading and why disabling sickness is a constant threat to the security of the individual and the family of small or modest means.

The effects of temporary disability are in all important respects like the effects of temporary unemployment; each deprives the worker and his family of income for a shorter or longer period. The effects of chronic, long-continued, or permanent disability are like the effects of old age, except that unlike old age, disabling disease is not confined to the last and relatively nonproductive periods of life. Disability affects persons at all ages. When the worker has dependents to support, its consequences are most severe.

(3) AN ESTIMATE OF THE PERMANENTLY DISABLED

Of the five or six million disabled persons on an average day of the year, perhaps one half, more or less, are suffering from temporary disabilities from which they will recover sooner or later. The other half are permanently and totally disabled from disease and other disabling conditions. Four fifths of these persons, or nearly 2,000,000, are in the ages under 65. Many of these persons have families and dependents; in many instances, these disabled persons have been the sole support of their families. A rough estimate which takes account of the immediate families of these disabled persons suggests that between eight and ten million persons are probably quite directly affected by their permanent disablement and loss of earning capacity.

PART II. THE COMMITTEE'S RECOMMENDATION

Under the present social security program, workers are assured some continuance of partial income, in lieu of their regular wages, when they become unemployed and are able to work. Under the workmen's compensation laws, most of them are protected against wage loss resulting from accident or injury arising out of employment. But generally they have no protection against wage loss resulting from nonindustrial sickness or accident. A limited number of workers do have some such protection through voluntary insurance schemes, commercial or

4. Including persons with and without income.

5. This figure excludes services already provided through tax funds, takes account of reasonable economies which can be made, and excludes certain current wasteful, valueless, or even harmful expenditures.

nonprofit; but they are a small minority in the total. If the wage earner becomes unemployed for lack of a job, he is insured for some continuity of income between jobs (if he is in employment covered by unemployment compensation); but if he becomes unemployed because he is unable to work, he is thrown back upon such private and individual resources as he can command. Experience has shown the need for more substantial protection.

The Technical Committee on Medical Care therefore submits as its *fifth recommendation*:

RECOMMENDATION V: FEDERAL ACTION TOWARD THE DEVELOPMENT OF PROGRAMS OF DISABILITY COMPENSATION
(1) DIFFERENT INSURANCE PROVISION FOR TEMPORARY AND PERMANENT DISABILITY

There is good reason to believe that the insurance against disability can best be treated not by a single insurance system but by two systems closely coordinated. There is, first, the problem of the temporarily disabled worker—the worker who has an acute illness and for whom there is every reason to expect that, after a few weeks or a few months, he will recover and return to work. There is, second, the problem of the permanently disabled worker—the worker who, by reason of crippling or chronic illness, will probably never again be able to enter gainful employment. The administrative problems to be met in paying benefits to the first worker are quite different from those which arise in the case of the second worker, and there are important reasons for believing that the rate of benefits provided through insurance should not be identical. An arbitrary line may be drawn between temporary and permanent disability, defining the first, for example, as disability lasting less than twenty-six weeks and the second as disability lasting more than twenty-six weeks.

Temporary disablement is much like temporary unemployment. Insurance against temporary disablement may be patterned after unemployment compensation, with repetitive certification of disability by a physician as a procedure analogous to repetitive registration at an employment office.

Permanent disablement is more like old-age retirement. The permanently disabled worker leaves the labor market in the same sense as does the aged person; both of these classes of persons permanently cease to have earnings. The disabled worker is generally younger than the retired worker and therefore more often has a dependent spouse and dependent children. Hence, assurance of some income is at least as urgent, socially, for the disabled as for the aged. Not involving the need for repetitive certification (except for those cases in which recovery or rehabilitation is possible), permanent disability (invalidity) insurance is similar to old-age insurance where certification of retirement age establishes the basis for the award of a retirement annuity. Permanent disability insurance may therefore be conveniently patterned after old-age insurance and may actually be established by introducing invalidity benefits into the present old-age insurance system.

Temporary disability compensation, patterned after unemployment compensation, would involve a cost of approximately 1 per cent of wages. With a substantial but not unreasonable waiting period—seven, ten or fourteen days, this would probably support benefits calculated at 50 per cent of wages for a maximum of at least twenty-six weeks. The allocation of the cost may have to be different from that which is customary in unemployment compensation.

Permanent disability insurance with benefits geared to old-age benefits would probably cost 0.1 to 0.2 per cent of wages at the outset and the cost may be expected to rise in the course of years, attaining between 1 and 2 per cent of wages in twenty years and perhaps 1.5 and 3 per cent a generation or two later, the exact cost depending on the benefits provided and on numerous other factors.

A disability compensation program is not primarily part of a medical care program. Nevertheless there are important interrelations between the two. The cost of compensation for disability would be needlessly high if wage earners generally did not receive essential medical care. Hospitalization and other institutional care and vocational rehabilitation for workers who are disabled are essential if those who can be restored to work-

ing capacity are to receive the necessary care. Without such facilities and services, the cost of invalidity annuities would be unnecessarily burdened. These and similar considerations indicate some of the interrelations between disability insurance and a general health program.

CONCLUSION

This discussion of recommendations IV and V submitted by the Technical Committee on Medical Care has probably raised more questions than it has answered. The Committee's purpose has been to present the needs which exist and to outline, only in broad terms, the general pattern of programs to meet these needs.

It is obvious that recommendations IV and V deal with somewhat different procedures, but both bear on common problems. The fundamental objectives involved here are: first, conservation of health and vitality; and, second, reduction of the role of sickness as a cause of poverty and dependency.

This report from the Committee began by dealing with the needs of self-supporting persons. It has inevitably come to deal both with them and with the more unfortunate. A general program of medical care therefore makes provision simultaneously for both. No one wants two systems of medical care—one for the self supporting and another for the needy—any more than two systems of education.

Though not explicitly stated, it has been assumed throughout the Committee's report that any general program would provide for effective coordination between preventive and other services. It has also been assumed throughout that such a program, by furnishing a strengthened economic base, provides new opportunity for improvement in the quality of medical services through the concerted activities of official agencies, educators, and practitioners.

In good times and in bad times, sickness is a major cause of poverty, destitution, and a large part of all dependency. Through periods of prosperity and of depression, sickness still remains the most constant factor in dependency. It occurs more frequently and for longer periods among the unemployed than among the employed, among the poor than among the rich. It is associated with various other manifestations of social disorganization such as unemployment, low income, poor housing and inadequate food. If we are to lessen destitution and poverty, if we are to penetrate to the causes of dependency, we must strike simultaneously at this whole plexus of social evils within our society. It is of little avail to employ modern technics in solving the problems of unemployment, housing and low wages if we leave to the forces of *laissez faire* the problem of sickness which pervades and contributes to these other factors in dependency, because so frequently it strikes down otherwise self-supporting persons.

During the last quarter of the nineteenth century, public health authorities and medical practitioners made a brilliant and successful record through a mass attack on unhealthy environments and on communicable disease. But we cannot be satisfied with the great achievements of the past. A similar attack is needed now on the ailments and disabilities of individuals. Our primary concern at present is not with catastrophic plagues but with ever-present diseases responsible for the disabling illness of five or six million persons.

We have been derelict in failing to work more actively to prevent dependency. Many widows and orphans are now being supported at public expense who have been deprived of their natural support by preventable accidents and equally preventable diseases. Many persons are now among the unfortunate whom we label as the "unemployables" solely because they could not afford the medical care that would have kept them employable and independent. So long as we fail to provide adequate programs for medical care and for protection against loss of earnings, just so long are we permitting the creation of a permanent class of disability dependents. The sick do not gather in crowds on the streets of our cities, but their needs are not less urgent.

The Committee submits this report with the hope that the recommendations may serve as a basis of discussion on which to crystallize a program to meet the basic essentials of a nation's health.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALASKA

Series of Lectures on Obstetrics.—A series of lectures on obstetrics will be given throughout Alaska under the auspices of the maternal and child health division of the Territorial Department of Health in cooperation with the physicians of Alaska. Dr. Morris Edward Davis, associate professor of obstetrics and gynecology, School of Medicine, Division of Biological Sciences, University of Chicago, will be the speaker. The titles of the lectures are "Diagnosis and Treatment of Hemorrhage Late in Pregnancy," "Diagnosis and Treatment of the Toxemias of Pregnancy," "Prevention and Treatment of Uterine Infection," "The Common Obstetric Operations" and "Treatment of Prolonged Labor." The lectures will be repeated at each of the following centers: Fairbanks, August 4-7; Anchorage, August 10-11; Juneau, August 15-18, and Ketchikan, August 20-24.

ARKANSAS

Personal.—Dr. Joseph H. Sanderlin has been appointed medical director of the Pyramid Life Insurance Company, Little Rock.

Society News.—The Lawrence County Medical Society was addressed in Walnut Ridge recently by Drs. Thomas C. Guthrie, Smithville, on antepartum care and John H. McCurry, Cash, treatment of snake and spider bites. At a meeting of the Washington County Medical Society recently Dr. Allan A. Hilbert, Fayetteville, spoke on "Spontaneous Pneumopericardium." The Tri-County Medical Society was addressed recently, among others, by Dr. Ralph E. McLochlin, Little Rock, on "Management of Congestive Heart Disease."

CALIFORNIA

Study of Pneumonia.—A survey to determine which types of pneumonia occur most frequently in California began July 1 under the auspices of the U. S. Public Health Service with the cooperation of the California Medical Association. Bacteriologic examinations will be made in the laboratory of the state department of health at the University of California. It was stated that the area of fifty miles extending from San Francisco to the Nevada line had been selected for the survey.

Rinaldo Found Guilty Again—Ordered from State.—Eugene J. Rinaldo, Los Angeles, was given a suspended sentence of 180 days in the city jail April 28, following a plea of guilty to practicing medicine without a license. Municipal Judge Joseph L. Call suspended the sentence on condition that Rinaldo leave the state within thirty days and remain away for two years. Rinaldo has been in the courts continuously for about thirteen years. His license was revoked in 1924 and again in 1932 on the charge that it was obtained under false and fraudulent credentials. In the testimony it was shown that Rinaldo's credentials purporting to be from the St. Louis College of Physicians and his certificate of preliminary education required by the California medical practice act were falsely and fraudulently obtained. After the revocation in 1924 Rinaldo appealed to the courts, which restored the license July 3, 1928. The state board of medical examiners revoked the license again Oct. 18, 1932, and its action was affirmed by the courts in 1935. He paid a fine of \$500 Dec. 14, 1937, following conviction by a jury of practicing medicine without a license. At this time he was given a suspended sentence of 180 days in jail and placed on two years' probation. The recent offense for which he was tried is assumed to be a violation of this probation.

CONNECTICUT

Public Health Meeting.—A joint meeting of the Connecticut Public Health Association and health officers was held at the Hotel Stratfield, Bridgeport, May 25. The speakers included:

Dr. Earle G. Brown, Mineola, health officer of Nassau County, New York, Full Time Health Service.
James L. Barron, director, division of sanitation, Westchester County Department of Health, New York, The Place of Sanitation in the Health Program.
Dr. Paul S. Phelps, director, bureau of tuberculosis, Hartford Board of Health, The Administrative Control of Tuberculosis.
Mary McManus, R.N., superintendent, tuberculosis nursing service, bureau of nursing, New York City Department of Health, The Public Health Nurse and the Tuberculosis Program.

A round table discussion of scarlet fever immunization was held at a dinner session in the evening with Dr. Stanley H. Osborn, Hartford, state health commissioner, presiding; the speakers were Drs. Millard Knowlton, Benjamin G. Horning, Hartford, and James D. Trask, New Haven.

IDAHO

Smallpox Epidemic.—*Northwest Medicine* reports that about fifty cases of smallpox have recently occurred in Idaho Falls and vicinity.

Personal.—Dr. George H. Bischoff, Akron, Ohio, has been appointed in charge of the maternal and child health program of the state department of health, with headquarters at Boise.

ILLINOIS

Blood Tests at the State Fair.—A demonstration in the laboratory testing of blood specimens will be a feature of the annual state fair in Springfield August 13-21. A serologic laboratory will be installed in the exposition building as a part of the exhibition by the state department of health.

Chicago

Personal.—Dr. Conrad S. Sommer, medical director, Illinois Society for Mental Hygiene, has been appointed director of the organization, succeeding Miss Helen L. Myrick, resigned.

Lecture on Cancer.—Dr. James W. Cook of the Research Institute of the Royal Cancer Hospital and professor of chemistry, University of London, delivered a lecture at Michael Reese Hospital, July 14, on "Cancer Producing Agents and Their Biological Effects."

Grant for Research in Child Welfare.—The Institute of Medicine of Chicago announces that its committee on the Elizabeth McCormick Child Research Grant has at its disposal the sum of \$750 to aid a qualified investigator in the Chicago area in child welfare research. Projects should in a broad sense be in the field of pediatrics, it was stated. Applications will be received up to September 15 and the award made early in the fall. Applications should be sent to Dr. John Favill, secretary of the committee, 122 South Michigan Avenue.

Award for Research on Nutrition.—Lydia J. Roberts, Ph.D., chairman of the department of home economics, University of Chicago, received the Borden Award for research in nutrition, at the recent annual convention of the American Home Economics Association in Pittsburgh. The award consists of a gold medal and \$1,000. Dr. Roberts is a member of the Council on Foods of the American Medical Association. Amy L. Daniels, Ph.D., research professor of nutrition, Child Welfare Research Station, State University of Iowa College of Medicine, Iowa City, won the award in 1937 but the presentation was made at the recent convention.

INDIANA

Immunization Program.—At a meeting of the Johnson County Medical Society June 10 it was voted to cooperate with the county school superintendent to have all children of school and preschool age vaccinated against smallpox and typhoid and immunized against diphtheria before the opening of the fall term. A survey conducted by the medical society shows that only 30 per cent of these children have received diphtheria immunization and less than 20 per cent are vaccinated against smallpox and typhoid. Members of the medical society will donate their services to those who are unable to pay. Speakers will be supplied by the society to talk before organizations in the county that are interested.

IOWA

Immunize Indians Against Spotted Fever.—Prophylactic treatments with spotted fever vaccine were administered to 140 Indians at the Tama reservation May 23-27. The injections were administered by Drs. Ira D. Nelson, medical superintendent of the Sac and Fox Sanatorium, and Arthur A. Pace, visiting physician at the reservation. The Rocky Mountain Laboratory of the U. S. Public Health Service, Hamilton, Mont., supplied the vaccine. Last year six cases with two deaths were reported among the Indians at this reservation.

Society News.—Dr. Henry G. Decker, Des Moines, addressed the Buchanan County Medical Society June 16 on "Care and Treatment of Head Injuries."—A symposium on arthritis was presented before the Crawford County Medical Society in Denison June 7 by Drs. Michael William Barry and Eugene E. Simmons, Omaha.—Dr. Cecil W. Seibert, Waterloo, discussed "Therapeutic Use of Endocrine Products

WISCONSIN

Society News.—Dr. Hans H. F. Reese, Madison, and Byron J. Hughes, Winnebago, discussed "Shock Therapy and Dementia Praecox" before the Winnebago County Medical Society recently.—The Milwaukee Society of Clinical Surgery was addressed May 24 by Drs. Rudolph W. Roethke, Milwaukee, on "Contraindications for Cesarean Section"; Carl S. Williamson, Green Bay, "Surgical Problems," and John D. Steele, Milwaukee, "Diagnosis and Treatment of Tumors Arising in the Bronchi."

WYOMING

State Medical Meeting.—The thirty-fifth annual session of the Wyoming State Medical Society will be held at the Connor Hotel, Laramie, August 7-9, under the presidency of Dr. Victor R. Dacken, Cody. The speakers will include:

- Dr. Paul F. Miner, Sunrise, Ectopic Pregnancy.
- Dr. George H. Phelps, Cheyenne, The Procedure Used in the Third Stage of Labor and the Puerperium.
- Dr. Thomas D. Cunningham, Denver, The Treatment of Severe Asthmatics.
- Dr. Harry H. Wear, Denver, Management of Ureteral Calculi.
- Dr. Peter M. Schunk, Sheridan, Alar Scapulae.
- Dr. Joseph C. Kamp, Casper, Use and Abuse of Sulfanilamide.
- Dr. Roger L. J. Kennedy, Rochester, Minn., Emergencies of Infancy and Childhood.

There will be a symposium on medical care Monday with the following speakers: Dr. Dacken, Dr. Walter R. Carey, Sheridan, Dr. Arthur L. Miller, Kimball, Neb., president-elect, Nebraska State Medical Association, and Mr. Jack D. Laux, Chicago, Bureau of Medical Economics, American Medical Association. A symposium on fractures will be held Tuesday with Drs. Joseph L. Wicks, Evanston; Hamilton I. Barnard, Denver; Lawrence C. Snow, Salt Lake City, and John R. Nilsson, Omaha, as the speakers. Entertainment will include golf, a smoker and movies, while special plans have been made for the ladies. A special feature will be the movie "Birth of a Baby."

GENERAL

Examination in Anesthesiology.—The American Board of Anesthesiology, Inc., an affiliate of the American Board of Surgery, will hold written and oral examinations October 21-22 in New York. Applications must be filed sixty days prior to examination. The secretary is Dr. Paul M. Wood, 745 Fifth Avenue, New York.

Another Swindler Operating Among Physicians.—A North Carolina physician reports that he was swindled by a man who claimed he had been injured at work and presented a check purporting to be for compensation. Giving the name Gilbert N. Evers, the man stated that he had injured his elbow and had had paralysis of two fingers. He said he had entirely recovered and asked the physician to write a letter authorizing him to return to work. The physician wrote the letter, charged \$2 for the examination and cashed the supposed compensation check for \$14. The check came back; a letter to the Carolina-Virginia Transfer Company, the firm name given by the swindler, was returned. Later the local police department reported that a man had used the same method in Savannah, Ga., giving the name Wassing. Police are trying to locate him.

Society News.—Dr. John P. Nuttall, Santa Monica, Calif., and Wilson H. Lec, New Haven, Conn., were elected presidents of the American Association of Medical Milk Commissions and the Certified Milk Producers Association of America, respectively, at the joint annual conference of the associations in San Francisco recently.—Dr. Irvine McQuarrie, Minneapolis, was elected president of the American branch of the International League Against Epilepsy at its annual meeting in San Francisco June 7; other officers are Drs. Edward M. Bridge, Baltimore, and Albert W. Pigott, Skillman, N. J., vice presidents; Frederic A. Gibbs, Boston, secretary-treasurer, and Adolf Meyer, Baltimore, vice president for America of the International League.—The annual meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons will be held at the Hotel Greenbrier, White Sulphur Springs, September 22-24, under the presidency of Dr. Paul Titus, Pittsburgh.

Special Society Elections.—Dr. James B. Cross, Buffalo, was chosen president-elect of the American Urological Association at its annual meeting in Quebec, Canada, June 27-30, and Dr. Edgar G. Ballenger, Atlanta, Ga., was installed as president. Dr. Clyde Leroy Deming, New Haven, Conn., is secretary.—Dr. Lawrence A. Pomeroy, Cleveland, was made president-elect of the American Radium Society at the annual meeting in San Francisco June 13-14, and Dr. William P. Healy, New York, became president. Dr. Frederick W. O'Brien, Boston, is secretary. The next annual meeting will be in St. Louis.

P. E. Smith, Ph.D., New York, was made president-elect of the Association for the Study of Internal Secretions at the annual meeting in San Francisco June 14 and Dr. David P. Barr, St. Louis, was installed as president. The 1939 meeting will be held in St. Louis.—Dr. Frederick C. Holden, New York, was elected president of the American Gynecological Society at the annual meeting in Asheville, N. C., May 31.

International Goiter Conference in Washington.—The third International Goiter Conference will be held in Washington, D. C., September 12-14, with the American Association for the Study of Goiter and the Medical Society of the District of Columbia acting as hosts. The subject for the first day will be endemic goiter; for the second, thyroid in relation to endocrinology and metabolism, and for the third, hyperthyroidism. Among the speakers listed on the preliminary program are Drs. Oliver P. Kimball, Cleveland; T. Lang, Munich, Germany; John deJ. Pemberton, Rochester, Minn.; Giacomo Pighini, S. Maurizio, Italy; James B. Collip, Montreal, Canada; Henry J. John, Cleveland; Roy G. Hoskins, Boston; Carl Wegelin, Bern, Switzerland; David Marine, New York; Pedro Cossio, Buenos Aires, Argentina, and Isidor S. Ravdin, Philadelphia. All meetings will be in the ballroom of the Mayflower Hotel. Dr. Harry H. Kerr, clinical professor of surgery, George Washington University School of Medicine, Washington, is local chairman of arrangements.

Republican Committee to Discuss Medical Care.—The proper scope of governmental responsibility for medical care will be the theme of a round table discussion at the summer session of the Republican Program Committee Wednesday August 3, at Thorne Hall, Northwestern University. According to a recent announcement, health insurance in its various forms, voluntary and compulsory, will be considered in favorable and adverse discussions. Included among the speakers are:

- Dr. Sigismund S. Goldwater, commissioner of the department of hospitals of New York City.
- Dr. Arthur C. Christie, Washington, D. C., formerly president of the Medical Society of the District of Columbia.
- Dr. John P. Peters, John Slade Ely professor of medicine, Yale University School of Medicine, New Haven.
- Dr. Howard L. Snyder, Winfield, formerly president of the Kansas Medical Society.
- Mrs. James E. Hollingsworth, New York, special student of health insurance methods.

Mr. Morris A. Linton, president of the Provident Life Insurance Company, leader of the discussion, will report on social security for old age. Glenn Frank is chairman of the Republican Program Committee.

Assembly of Laboratory Directors.—An assembly of laboratory directors and serologists will be held in Hot Springs National Park October 21-22 under the auspices of the Committee on Evaluation of Serodiagnostic Tests for Syphilis, U. S. Public Health Service, and the American Society for Clinical Pathologists. With Dr. Thomas Farran, surgeon general of the public health service, as chairman, the assembly plans to consider means and methods to improve and to make more generally available the serologic tests which are so important in syphilis control work. It is planned to conduct the program in four sections, the first to consider the need for adherence to conventional technic in the routine performance of reliable serodiagnostic tests; speakers will be Drs. Harry Eagle, Baltimore; William A. Hinton, Boston; Benjamin S. Kline, Cleveland; John H. Kolmer, Philadelphia, and Reuben Kahn, Sc.D., Ann Arbor, Mich. Drs. Frederick H. Lamb, Davenport, Iowa, and Augustus B. Wadsworth, Albany, N. Y., will discuss the desirability of licensing or approving for the performance of serodiagnostic tests for syphilis laboratories within the states by the respective state departments of health. The remaining two sections will discuss the need for training of laboratory personnel and the prosecution of the studies to evaluate the performance of serologic tests within the states. The chairmen of these four sections are Drs. Walter M. Simpson, Dayton, Ohio; Henry H. Hazen, Washington, D. C.; Arthur H. Sanford, Rochester, Minn., and Francis E. Seneear, Chicago. A separate committee will draft recommendations for each of the four sections for presentation to the assembly.

The Prevention of Blindness.—The annual report of the National Society for the Prevention of Blindness notes that thirty years ago a New York State Committee on Prevention of Blindness was formed, interested mainly in fighting opthalmia neonatorum. From this beginning grew the present society with 18,000 members and donors, whose services include all types of sight conservation. In the past year, the society participated in the campaign against syphilis as one of the major causes of blindness. The number of students enrolled in summer classes for the training of teachers for sight-saving

classes in various colleges was 120. Forty-four sight-saving classes were established during the year, bringing the total number in the United States to 558. Investigations were made to determine what information on eye hygiene should be taught in schools and how such information could be integrated into the curriculum. The society believes that the annual campaigns for safe and sane celebrations of Independence Day have aided in reducing the number of accidents; statistics and other material have been used in securing enactment of legislation to curb these accidents. Among other activities the society acts as the secretariat for the Inter-Organization Committee on Sight Conservation, which was formed by several interested organizations to consider possibilities of incorporating prevention of blindness in the programs of state health departments. It conducted last year a training institute for personnel to undertake local blindness prevention work and cooperated in plans for the New York World's Fair. The society's expenditures amounted to \$154,000 and its income to \$120,000, making it necessary to draw on its reserve fund for \$34,000.

FOREIGN

Congress of Surgery Canceled.—The congress of the International Society of Surgery, which was to have been held in Vienna September 19-22, has been canceled. According to the *Lancet*, it is planned to hold a congress in Brussels on the same dates.

King of Sweden Aids Paralysis Fund.—King Gustaf V presented to a fund for fighting infantile paralysis and rheumatic diseases a check for 4,333,000 kroner (more than \$1,000,000) presented to him by his subjects on his eightieth birthday June 16. It was said that 1,018,000 persons contributed to the gift.

Dr. Chevalier Jackson to Lecture in Paris.—A course in bronchscopy and esophagoscopy will be given by Dr. Chevalier Jackson, Philadelphia, with the collaboration of other lecturers, at the Hôpital Necker, Paris, August 23 to September 1, the *British Medical Journal* announces. Further information may be obtained from Dr. Jean Zha, Hôpital Necker, rue de Sevres, Paris.

Personal.—Dr. Leonard Parsons, University of Birmingham, was to receive the Dawson Williams Prize of the British Medical Association at the annual meeting in Plymouth July 19. This was the fifth presentation of the award, a certificate and a check for 50 guineas, which is made in recognition of research in pediatrics. Dr. Parsons delivered the Dawson Williams Lecture on nutritional problems of childhood.—Dr. Ferdinand Sauerbruch, Berlin, has been made editor of *Neu deutsche Chirurgie*, succeeding Prof. Erich Lexer.

Government Services

Studies on Pellagra

Field experiments on the prevention of pellagra with nicotine acid are being conducted by the National Institute of Health at the Milledgeville (Ga.) State Hospital and in Mississippi under the supervision of P. A. Surg. Robert H. Onstott, U. S. Public Health Service, acting health officer of Holmes County, in cooperation with the Mississippi State Health Department.

Examination for Entrance into Navy Medical Corps

An examination for commission in the medical corps of the U. S. Navy and for appointment as interns will be held at all naval hospitals in the United States and at the Naval Medical School, Washington, D. C., beginning November 7. Candidates for admission must be between the ages of 21 and 32 at the time of appointment and graduates of or senior medical students in class "A" medical schools only. Additional information may be obtained from the Surgeon General, U. S. Navy, Bureau of Medicine and Surgery, Washington.

Navy Personals

Rear Admiral Will M. Garton has been transferred from the bureau of medicine and surgery as inspector of medical department activities on the Atlantic Coast to duty at Los Angeles as inspector of medical department activities on the Pacific Coast. He succeeds Rear Admiral Ulys R. Webb, who retired for age February 1. Capt. Frederick E. Porter, now attached to the naval hospital at San Diego, Calif., will succeed Rear Admiral Garton in the bureau of medicine and surgery.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 2, 1938.

Attack on Birth Control

At a national conference on maternity and child welfare held at Bristol, Mr. C. M. MacInnes described birth control as a great vested interest battenning on the gradual extermination of the British race. The dominions are sparsely populated. Canada could carry a population of from 60 to 70 millions instead of 10; Australia, from 20 to 30 instead of 8, and New Zealand, nine times its present population. Yet in all the dominions the birth rate was declining. In New Zealand and Australia, in spite of health conditions unequaled anywhere, the decline was tragically rapid. On the basis of the rate of decline in recent years, the population of England and Wales will in a century be only 4,626,000. "The grim fact," said Mr. MacInnes, "is that medical science cannot abolish death, but birth can not only be reduced but can be entirely prevented."

Dr. H. J. Drew, professor of obstetrics, Bristol University, said that the economic situation and fear of childbirth were the two main causes of a wife's refusing to become a mother, but we had the lowest maternal mortality rate of any country except Holland. The women of England should be told this. "I am wondering," he said, "if in the mind of the patient we are turning pregnancy into a disease by our constant supervision. The woman who just booked a doctor for her confinement and did not see him again until labor was mentally better off than her daughter or granddaughter, who regularly visits a doctor or attends an antepartum clinic."

Ordering Poisonous Drugs Over the Telephone

In a previous letter (*THE JOURNAL*, May 28, p. 1847) the fatal mistake of a nurse who administered to a patient an enema of 6 ounces instead of 6 drachms of paraldehyde which was ordered by a physician over the telephone was reported. It now appears that it is a common practice to order poisonous drugs over the telephone, although this infringes the official poison rules. The Pharmaceutical Society, after consultation with the British Medical Association, has therefore issued a warning to physicians and pharmacists that the drugs listed under schedule 4 of the poison rules may be supplied to the public only on medical prescription. Those in common use are cinchophen, aminopyrine and the numerous barbiturates. They may be supplied by pharmacists to physicians in response to a telephone order but not to patients on a telephoned prescription. The Pharmaceutical Society, as the authority for the administration of the rule, can no longer acquiesce in failure to comply with it and must bring offenders into court. It wants to avoid this and therefore appeals to both physicians and pharmacists to observe their legal obligations.

Professor Freud Honored

Professor Freud, who recently came from Vienna to London, where he will reside, has been the subject of an unusual honor. He is a foreign member of the Royal Society, and his health did not allow him to visit the offices of the society to sign the book. It was therefore taken to his residence for the purpose. This is a signal honor, as only on rare occasions is the charter book of the Royal Society removed from headquarters. One of these is when it is taken to Buckingham Palace for the signature of the king, who is patron of the society.

Refugee Physicians and Dentists

The government was asked in the House of Commons whether refugees from Germany and Austria were allowed to practice as physicians or dentists in this country if suitably qualified. Mr. Geoffrey Lloyd, undersecretary to the Home

Office, replied: "Permission has been given in a limited number of cases to refugee physicians and dentists from Germany to practice their profession after admission to the British medical and dental registers. The question of admitting a further number from Austria is now under consideration. Before a decision is reached, representatives of the medical and dental professions in this country will be consulted."

PARIS

(From Our Regular Correspondent)

July 2, 1938.

Building for Paris Transfusion Center

There are sixteen large public hospitals with an average of 1,500 beds each in the department of the Seine, in which Paris is located. A transfusion center under the direction of Dr. Arnault Tzanck was organized about ten years ago at the Hôpital Saint-Antoine, which keeps a list of donors who can be called at any hour of the day or night. This service is available not only for the patients in public hospitals but also for those in private hospitals and in homes. June 17 a special building for the Transfusion Center was opened by Mr. Rucart, minister of public health. This building is the gift of Mrs. Raba Deutsch de la Meurthe and is constructed according to the ideas of Dr. Tzanck. In addition to an office in which applications of the donors and calls for transfusion are received there is a library on all aspects of the subject. All donors after having been tested at the St. Antoine Center are reexamined for purposes of control at another hospital, the Saint-Louis. Laboratories are available for the examination of donors and can be used also for research workers. In one of the rooms, specially equipped for the purpose, flasks of refrigerated blood are kept for emergency use. Such refrigerated blood can be used during a maximum of two weeks after the flasks have been filled with the citrated blood.

True Lipoid Nephrosis

Few French internists have admitted that lipoid nephrosis, as maintained by Volhard, exists as an independent clinical entity. At the May 6 meeting of the Société médicale des hôpitaux three cases of genuine lipoid nephrosis were reported by Professor Rathery and Dr. Froment. They stated that a lipoid nephrosis is not a nephritis as maintained by many here. The renal epithelium, which is infiltrated with fat as found in lipoid nephrosis, is not an example of fatty degeneration. The clinical and humoral syndrome includes albuminuria, edema, the presence of birefractive bodies in the urine, decrease of blood proteins, increase of lipemia and cholesteremia. Lipoid nephrosis is comparatively rarely seen clinically; hence the authors considered it worth while to report three cases, all cured following the use of a diet rich in proteins but poor in fats, accompanied by the employment of thyroid extract. One of the patients was a boy aged 14 years; the others were adults. Large doses of thyroid extract were necessary in all the cases before they could be considered cured.

In the discussion, Lesné said that he had followed six cases in children over a period varying from two to nine years. They appeared to be definitely cured following a diet rich in proteins, but practically salt free, combined with intensive and prolonged use of thyroid extract. Artificial fever therapy can be employed only if there is no coexistent nephritis.

Dr. Robert Clement had been able to find thirty-nine observations of pure lipoid nephrosis. Four cases had been cured by artificial fever therapy but a transitory exacerbation of the clinical symptoms and increase of protein-lipid disturbance of equilibrium had been noted in all four.

The favorable influence of artificial fever and thyroid treatment may perhaps clear up the pathogenesis of lipoid nephrosis, which calls for an entirely different treatment from that of an ordinary nephritis.

At the June 3 meeting of the same society, a case of typical lipoid nephrosis in a child was reported by Dr. E. Lesné and his associates. The patient had been under observation between the ages of 2½ and 8 years. When first seen in August 1932 there was a history of the sudden appearance of a generalized edema, beginning in the eyelids and accompanied by a marked albuminuria. The examination of the blood and urine confirmed the diagnosis of lipoid nephrosis. The treatment was the same as that outlined by Professor Rathery, viz., 100 Gm. of meat, one egg without salt daily and thyroid extract. The child at present appears normal in every respect, confirming the generally accepted view that the prognosis is favorable if the lipoid nephrosis is not accompanied by a nephritis.

Anuria Following Removal of Parathyroid Adenoma

An interesting case of hyperparathyroidism was reported by Drs. Moulouguet and Lièvre at the May 6 meeting of the Société médicale des hôpitaux. The patient was a woman who had never been ill up to the age of 45, at which time (December 1935) a marked polydipsia and loss of weight were noticed. In July 1937 muscular weakness especially of the lower extremities appeared and a small tumor of the upper jaw was curetted, which was found on microscopic examination to be a giant cell sarcoma. She was first seen by Drs. Moulouguet and Lièvre in January 1938 and complained of weakness, headaches and palpitation. Examination revealed marked atrophy of the leg muscles, normal reflexes, and absence of the Chvostek sign and of any sensory changes. There was an increase in the calcium but decrease in the phosphorus content of the blood. The neuromuscular reaction to both faradic and galvanic currents was diminished. Radiography of the skeletal bones revealed areas of absorption in the cortical portions of the long bones and scapula as well as of the skull. The diagnosis of parathyroid adenoma was based on the polydipsia, anorexia, constipation, muscular weakness and giant cell tumor of the jaw taken in conjunction with the blood count and the electrical and radiologic observations. A week after admission to the hospital, a right-sided tumor at the upper pole of the thyroid, which on microscopic study proved to be parathyroid adenoma, was removed. A third of the tumor was inserted under the skin of a guinea pig, which was killed eighteen days later. Some foci of bone resorption were found in the femur of the animal. The operation for removal of the parathyroid adenoma was followed by an anuria of forty-eight hours' duration accompanied by a rise to 260 mg. per hundred cubic centimeters of the urea content of the blood. The anuria receded following use of physiologic solution of sodium chloride. The authors believe that the anuria can be explained as the result of the sudden cessation of the polyuria which had been due to the diuretic action of the parathyroid hormone before operation.

Action of the Lung on Bacteria in the Blood

The lungs play an important part in the struggle against infections, according to Professor Binet and Dr. Jaulmes of the physiology department of the Paris Medical School. Their research work was reported at the May 31 meeting of the Académie de médecine. In their experiments, after the lung was isolated aseptically it was aerated rhythmically and perfused with citrated blood under physiologic conditions of temperature and atmospheric moisture. When cultures of various bacteria, such as the enterococcus, Staphylococcus aureus, hemolytic streptococcus, anthrax and Bacillus pyocyaneus, were injected into the blood used to perfuse the lung, a gradual disappearance was noted of the bacteria in the blood circulating in the isolated lung. No such destruction of bacteria took place in citrated blood kept in the incubator and inoculated with the same bacteria. This disappearance of bacteria exposed to the action of the lung is so marked that from 85 to 95 per cent of the inoculated mediums remained sterile at the end of one hour and all

were sterile during the following two hours. Three factors appear to enter into action, the blood in the form of blood platelets and phagocytes, the atmospheric gases entering the alveoli and the action of the pulmonary tissue itself. Of these, it was believed that the first and last were the most important in the destruction of bacteria in the pulmonary vessels. The same results were obtained in a series of forty-eight experiments.

Raynaud Syndrome Treated by Irradiation of the Hypophysis

An effort is being made by neurologic surgeons to control certain syndromes due to vasomotor dysfunction by sympathectomy and removal of the stellate ganglion. A case reported by Etienne May and his associates at the May 6 meeting of the Société médicale des hôpitaux is of interest because of the failure of operative intervention and the success of irradiation of the hypophysis. The patient was a woman aged 47, who had been first seen in November 1936 complaining of a Raynaud syndrome localized in the right hand, in the form of severe pain, cyanosis and evidences of poor circulation, most marked in the fingers. A perisympathectomy of the brachial artery in December 1936 failed to give any relief, so a removal of the stellate ganglion was done about a month later, but the cyanosis, coldness and severe pain in the fingers persisted. In October 1937 irradiation of the hypophyseal region was begun at the rate of two treatments a week. A total of 1,500 roentgens was given and an immediate improvement noted in the circulation of the hand, and at the time the case was reported the Raynaud syndrome had completely disappeared. The authors believe that irradiation of the hypophysis is especially indicated in cases of vasomotor dysfunction occurring during the menopause.

In Memory of Prof. Léon Bernard

The medical profession of France sustained a great loss by the death of the phthisiologist Prof. Léon Bernard. At a memorial meeting at the Hôpital Laënnec June 12, a bas-relief was presented to the tuberculosis clinic by his many admirers. Prof. Robert Debré, a former assistant of Professor Bernard, spoke of how happy the latter had been during his service at the Hôpital Laënnec, so full of souvenirs of Laënnec himself and of Landouzy. From 1928 to the time of his death Professor Bernard had supervised a tuberculosis service which was visited by specialists of all countries. His work in the establishment of antituberculosis dispensaries all over France and its colonies has rendered invaluable service in combating a disease which is very prevalent in France.

Death of Prof. Jean Darier

One of the leading French dermatologists, Prof. Jean Darier, has died at an advanced age. His textbook is used in many countries. He was a pupil of Ranvier and of Malassez, and he acquired from them a thorough knowledge of the normal and the pathologic structure of the skin. Darier's clinic was frequently visited by dermatologists from all parts of the world. His articles on tuberculosis as well as on syphilis and cancer of the skin represented a great deal of research on these subjects.

Congress on Renal Insufficiency

The second congress devoted to questions relating to renal insufficiency will be held at Evian, September 21-24. The president is Prof. F. Rathery of Paris. Those who desire information regarding the congress are asked to write to the Secretary of the Renal Insufficiency Congress, 138 rue des Champs-Élysées, Paris.

Twenty-Fifth Hygiene Congress

This year's meeting of the Hygiene Congress will be held as usual at the Pasteur Institute of Paris. The provisional program includes the proposed plan of sanitation in France, relation of diet to the public health, the part played by mutual insurance organizations against illness and by social insurance in public

health, and a series of conferences on hygiene and public health as well as protection against chemical warfare. For information write to Dr. X. Leclainche, 18 rue de Tilsitt, Paris 17.

BERLIN

(From Our Regular Correspondent)

June 4, 1938.

The Survival of Diabetic Patients

Dr. Kestermann and Dr. Schuwicht investigated 754 diabetic patients who within the last decade had been treated at the medical clinic of the University of Marburg on the Lahn. The males preponderated (56.9 per cent) and they outnumbered the females up to the age of 50, whereas in the older age group the distribution according to sex was about equal. The mortality was 7 per cent (fifty-three fatalities); twenty-one patients (2.8 per cent of the total number) died in coma. The latter were all first hospitalized at least eight hours after onset of the coma. The average duration of illness of the patients who died in the hospital (about 3.9 years) approximated the corresponding figure for the preinsulin era. The mean age at death was 53.2 years, in contrast to the mean age of 44.8 years in the preinsulin era. Among 528 diabetic patients discharged and followed up, 29.5 per cent died. The most frequent cause of death was circulatory decompensation; the second most frequent cause, diabetic coma. Of the survivors, 30 per cent adhered to a strict diet and 58 per cent to a moderately strict diet, while the diet of 12 per cent was virtually unregulated. Of the patients receiving insulin at the time of discharge, 64 per cent continued to have frequent injections, 9 per cent had occasional injections and 10 per cent discontinued the medication. Of the 372 survivors, 70 per cent were completely symptom free and able to work, 20 per cent were partially incapacitated and 10 per cent were completely incapacitated.

Experimentation with Liver Function

Prof. Franz Fischler, clinician, of Munich, who has done experimental research on the liver, reported on his investigations before the Munich Medical Society. The principal role of the liver in carbohydrate metabolism is the formation of new sugar. Professor Fischler has studied the influence of the rare earths on the liver. Repeated intravenous injections of a preparation of these substances in relatively small doses induce severe degeneration of the liver in the form of central necrosis of the lobules. The effect of the rare earths quickly subsides; regeneration ensues, with numerous mitoses in the parenchymal tissue of the liver. A further series of injections leads to atrophy of the organ, and the animal is threatened with a perhaps fatal hypoglycemia. Urinalysis done during the height of the effect discloses the presence of urobilin and urobilinogen, together with leucine and tyrosine. In these experimental degenerative processes the centrum of the acinus is the usual point of attack; the cells of the region liquefy, and the intermediate connective tissue undergoes proliferation. The effect of the rare earths may be diminished by injections of dextrose solution. The observation that intravenous injection of the rare earths in relatively small doses can produce a greatly intensified coagulability of the blood, which lasts for several hours, leads Fischler to envisage the possibility of using salts of these earths to prevent the formation of thrombi.

Prof. Herman Gocht Is Dead

Prof. Herman Gocht, for many years ordinarius in orthopedics at Berlin University, died May 18, aged 69. At a time when orthopedics was in its infancy, it was Gocht who performed fundamental pioneer services for this discipline. Orthopedic therapy has been greatly enriched by him. Gocht also was an editor. He had been chosen to preside over the congress of the International Society of Orthopedic Surgery to be held in Berlin next year.

AUSTRALIA

(From Our Regular Correspondent)

June 21, 1938.

National Health Insurance

Despite numerous difficulties and considerable opposition from sections of the community, the government has succeeded in steering the national health and pensions insurance bill through the House of Representatives, and it is expected that the scheme will be in full operation by Jan. 1, 1939. Objections by members of the British Medical Association in Australia to the capitation fee of 11 shillings have been met by the government with action for a complete investigation, and a royal commission will be set up as soon as practicable to advise on the payment to be made to practitioners under the scheme. The government has also allowed the profession some concessions in the way of extra fees for certain treatments. These fees will be paid by the patient for anesthetics, major operations, roentgenograms and pathologic examinations, treatment of venereal diseases and treatment of mishaps consequent on pregnancy. The dispute concerning capitation fees will not interfere with the early appointment by the government of between twenty-five and thirty doctors to supervise the operation of the medical services under the scheme. They will be selected from the ranks of general practitioners in each state and will be salaried officers of the commonwealth government. It will be the duty of these regional physicians to smooth out difficulties in the operation of the plan and to assist practitioners generally in running the insurance service.

The original bill has suffered several amendments in its passage through the house. The government has decided to institute a voluntary subsidized system under which medical benefits will be extended to the wives and children of insured men. This decision will affect 700,000 families, and the cost to the government will be approximately £175,000 a year. It is proposed that practitioners receive 18 shillings a year for every insured family brought into the scheme by voluntary contribution, irrespective of size, plus the capitation fee for the compulsory insured worker. This is based on the friendly society family unit of 3.2 persons per family, for which doctors in New South Wales, under the friendly society schemes, receive 29 shillings. Insurance companies have been excluded from the list of approved societies to administer the medical benefit section of the scheme, which means that friendly societies and trade unions will have almost a monopoly of the health administration. Government employees are excluded from the scheme when their own superannuation and provident schemes give benefits equal to those provided by national insurance. Hospital employees have also been exempted from contributions for health benefits when medical care and treatment provided by the hospital is not less than that provided under the national scheme.

BENEFITS

Benefits to which insured persons are entitled under the scheme as it now stands are medical treatment, including medicines and certain medical and surgical appliances; sickness benefits for men of 20 shillings a week and for women of 15 shillings, with an additional allowance of 3s. 6d. a week for each dependent child under 15; disablement benefits of 15 shillings a week for men and 12s. 6d. for women, with an allowance of 3s. 6d. for each child; old age pensions of 20 shillings a week for men over 65 years of age and 15 shillings a week for women over 60 years of age, together with medical attendance and treatment; widow's pensions of 15 shillings a week for life or until remarriage, with 3s. 6d. a week for each child; orphans' pensions of 7s. 6d. a week for each orphan child of an insured person, including insured widows. To secure these benefits, male workers earning less than £365 a year are required to pay 1s. 6d. per week and female workers 1 shilling a week. Women may voluntarily contribute another sixpence a week to qualify

for an old age pension of £1 instead of 15 shillings. Each compulsory contribution will be subsidized by an equal contribution from the employer. Juvenile contributors—that is, employees between 14 and 16 years of age—will pay fivepence a week and will be entitled to medical treatment and sickness pay of 5 shillings a week until they qualify for adult benefits. Insured men may voluntarily insure for the extension of medical benefits to their wives and children. This will cost those who wish to enrol sixpence a week, and the government will contribute 5 shillings a head annually for every married contributor.

ITALY

(From Our Regular Correspondent)

June 15, 1938.

Soldiers to Be Immunized Against Tetanus

Italian soldiers have been immunized heretofore against smallpox, typhoid and paratyphoid. From now on they will also be immunized against tetanus, according to orders recently given by the board of officers of the general center of military sanitation. This type of immunization is important, as it protects soldiers while they are in service and also afterward, when they are liable to suffer from wounds in industrial accidents. A mixed vaccine containing tetanic anatoxin in a suspension of typhoid and paratyphoid A and B bacteria has been prepared for the purpose. Each cubic centimeter of tetanic anatoxin contains 500 million typhoid bacilli and 375 million each of A and B paratyphoid bacilli in suspension. The anti typhoid vaccine which has been used heretofore in immunizing soldiers is to be replaced by the polybacterial vaccine. The latter is given in doses of 1 cc., the injection being given in the pectoral region with an interval of fifteen days between injections.

Society Meets in Bologna

The Società Medico-chirurgica of Bologna met recently with Prof. Giovanni Dagnini, president. Professor Dell'Acqua reported the results of observations which were carried on in twelve cases of grave forms of Weil's disease in the medical clinic of Bologna from 1930 to 1937. The biologic test was positive in three cases. In one case the spirochete was isolated from the urine. The speaker advocated a combined treatment of intravenous injections of sodium chloride and injections of adrenal cortex preparations. The former are of special value in the presence of hyperazotemia and chloropenia, whereas the latter control the grave asthenia which accompanies the condition.

Professor Paltrinieri spoke on the reaction of sarcoma to roentgen irradiation. The classification of sarcoma from a roentgenologic point of view is difficult. In the majority of cases sarcoma does not originate in proliferating cells, which are frequently the origin of spinocellular epithelioma and constantly the origin of lymphosarcoma. There are no criteria by which the radiosensitivity of a sarcoma can be determined before treatment. Osteosarcoma and fusocellular sarcoma are forms with high resistance to roentgen irradiation, whereas anaplastic sarcoma of either small or large round cells is highly responsive to the treatment. The responsiveness of lymphosarcoma is apparent rather than real. Clinical and sometimes complete reversion of the tumor frequently follows the first few irradiations. However, for obtaining complete destruction of the tumor, large doses are necessary. Primary lymphosarcomas have a tendency to reappear after roentgen treatment. They appear in the form of neoplastic degeneration in lymphatic structures other than the primary seat, especially at the hilus of the liver and the retroperitoneal lymph nodes. Professor Migliori reported the results of studies of the electrocardiograms of healthy premature infants. The most frequent changes were low voltage of all waves, especially in the first lead; predominance of the right ventricle, which was shown in nine of ten cases; a short period of atroventricular

conduction, with an average of from 0.08 to 0.11 second, and systole of long duration, which represented the 59.3 per cent of a cardiac revolution. The electrocardiograms of premature infants of low vitality showed the constant presence of bradycardia, prolongation of the systole up to 0.5 second and deformations or complete negativity of the ST deflections and the T wave in the second and third derivations.

Professor Caliceti said that in the course of acute suppurative otitis media he has observed a painful spot at the lower end of the retro-auricular furrow in the anterior portion of the tip of the mastoid. The pain is dull and becomes intensified by pressure on the concave space between the posterior border of the ascending branch of the lower maxilla and the latero-antral wall of the tip of the mastoid. It is caused either by neuralgia or by neuritis of the auriculotemporal nerve.

Care of the Sick in Hospitals

The problem of the reorganization of services rendered the public in the provinces is given attention by the Ministry of Internal Affairs. It was decided that minor hospitals will work as branches of central directing provincial hospitals. The aim of the reorganization is to give the public, especially patients of moderate means, the necessary care in sickness. All hospitals will be coordinated. The number of hospitals secondary to a central provincial hospital will depend on the amount of illness in the population of the province and on the economic condition of the population. Secondary hospitals will work, in turn, as central hospitals for infirmaries and centers for the medical care of ambulant patients. Military hospitals as well as insane asylums are included in the reorganization.

School for Police Research

A course in technical consultation on anthropology and psychology as applied to delinquents in police work is being given at the school for police research in Rome. Practical and technical observations of juridical police, identification and technic for detection of crime have been carried on with prisoners. Military and civilian physicians are enrolled in the course.

Trachoma

The Department of Public Health is studying the prevalence and the prevention of trachoma in the provinces. Every provincial physician must inform the investigating committee as to the number of departments, hospitals and other centers for the treatment of trachoma in the cities or towns in which he works, how the antitrachoma crusade is carried on for school children and whether there are colonies for trachomatous children and ophthalmologic clinics.

Deaths

Prof. Domenico Taddei, head of the Clinica Chirurgica of the University of Florence, is dead. He was born at Ferrara in 1875 and received the degree of M.D. in 1899. Shortly thereafter he was appointed assistant professor of anatomy and clinical surgery at Padua University; later he was appointed to the chair of clinical surgery of the University of Florence. He was a teacher of surgery for twenty-five years. He wrote textbooks on surgical diagnosis and surgical pathology. His clinical lectures were published in two volumes. His articles in the field of surgery number more than 200. Professor Taddei was a pupil of Albarran. He wrote a volume on renal tumors and many articles on surgical technics for the treatment of hemorrhagic nephritis, exstrophy of the bladder, anastomosis of the ureter and modifications of the ureter after nephrectomy. He was appointed recently as speaker to the Congress of the Società Italiana di Chirurgia. On that occasion he spoke on late results of surgical treatment of renal lithiasis. Professor Taddei was a founder member of the Società Tosco-Umbra di Chirurgia, a member of medical societies in Italy and abroad, vice president of the Società Italiana di Chirurgia, editor of *La Clinica chirurgica* and associate editor of *Rassegna internazionale di clinica e terapia*.

BELGIUM

(From Our Regular Correspondent)

June 1, 1938.

Use of Drugs by Athletes

Drs. Govaerts, Anciaux and Plasch spoke before the Société Médicale Belge d'Education Physique et de Sports, asking the society to concern itself with the problem of the use of drugs by athletes. The speakers presented a report on the drugs most frequently used by athletes for increasing their efficiency during sports. This practice should be severely prohibited. The substances most frequently used are alcohol, melissa water, strychnine and digitalis preparations. It is necessary to find out some simple reactions which can be used to ascertain the condition of athletes. Members of the society unanimously voted as follows: The Société Médicale Belge d'Education Physique et de Sports, the only Belgian organization of physicians who specialize in physical education, recently met to discuss the use of drugs by athletes. The problem was brought to the attention of the society by the Belgian Olympic National Committee. It was resolved that doping is a dangerous practice which is detrimental both to the health of the person and to the morals of athletes. It should be controlled by the most severe restrictions. Athletic efficiency is acquired by following the proper rules of hygiene and a rational progressive training under supervision of a physician. The society voted to have the athletic clubs obtain the services of a physician, preferably one who has specialized in physical education.

Poison from Exotic Woods

Dr. Hubinont reported in the *Revue de pathologie et de physiologie du travail* cases of poisoning in workers on exotic woods. The author says that several carpenters acquired industrial dermatosis from handling kambala, a wood from a species of colonial trees. He advises the following measures for preventing the toxic reactions: 1. Constant elimination of dust by means of powerful electrical fans. 2. Use of overalls during work. Closure of the clothes as hermetically as possible by the use of elastic bands at the wrist and the ankles. Protection of the body and especially of the genitalia by using an apron of strong material. Workers who show sensitivity to the woods in reactions of the eyes have to use eyeglasses during work, which should be distributed by the industrial firm. It is advisable, before beginning work, to apply some powder of either kaolin or talc on the hands and face. Workers in exotic woods are instructed to have a careful washing of the hands before taking anything to the mouth, before dining and before urinating.

Marriages

CHESTER COLWELL BRUMMETT, Middlesboro, Ky., to Dr. CATHERINE BOYD BELL of University, Miss., June 9.

WILLIAM GARLAND TALMAGE, Succasunna, N. J., to Miss Anne Radford Trott of Staunton, Va., May 27.

FRANK WOOLRIDGE BUCKNER, Davidson, N. C., to Miss Katherine Kern of Durham, June 11.

JAMES G. TELFER, La Crescenta, Calif., to Miss Margaret Baldwin of Manila, P. I., March 22.

LOUIS PHILIP BAILEY, Nathalie, Va., to Miss Telia Barner Barksdale of Sutherlin, June 18.

ARCHER W. BISHOP to Miss Mary Ellen Baker, both of Knoxville, Tenn., in June.

CALVIN LANE STEWART, Abington, Pa., to Miss Willard Noel of Johnstown, May 11.

JACOB BREM, Boston, to Miss Martha Louise Herwitz of Swampscott, July 10.

LEWIS DANZIGER to Miss Margaret Louise Ballantyne, both of Baltimore, July 2.

JOSEPH A. BEEMAN to Miss Emma Pohl, both of Portland, Ore., May 14.

Deaths

Henry Ottridge Reik ♂ Weehawken, N. J.; University of Maryland School of Medicine, Baltimore, 1891; member of the Medical and Chirurgical Faculty of Maryland, American Laryngological, Rhinological and Otolological Society, American Ophthalmological Society and the American Otolological Society; fellow of the American College of Surgeons; associate in ophthalmology and otology, Johns Hopkins University School of Medicine, Baltimore, 1896-1912; formerly executive secretary of the Medical Society of New Jersey and editor of its journal; served during the World War; in 1924 was promoted to colonel in the U. S. Army Reserve Corps; secretary general of the International Otolological Congress from 1909 to 1921; past president of the American Institute of Medicine; formerly editor of the International Medical and Surgical Surveys; formerly on the staffs of the Baltimore Eye, Ear and Throat Charity Hospital, Cambridge (Md.) Hospital and the Salisbury (Md.) Hospital; author of "Surgical Pathology and Treatment of Diseases of the Ear," "Diseases of Ear, Nose and Throat" and "Conservation of the Special Senses"; aged 70; died, June 2, of coronary thrombosis and myocarditis.

Henry Turman Byford ♂ Chicago; Chicago Medical College, 1873; professor of gynecology emeritus, University of Illinois College of Medicine; member of the Western Surgical Association; fellow of the American College of Surgeons; on the staffs of St. Luke's and Chicago Lying-in hospitals; honorary president of the International Congress of Gynecology in 1896 and president of the Chicago Gynecological Society during 1887 and 1888; author of "Manual of Gynecology"; joint author of "Diseases of Women," "American Text Book of Gynecology" and various other books and papers on the subject of gynecology; aged 84; died, June 5, of chronic myocarditis and nephritis.

Lawrence F. Flick, Philadelphia; Jefferson Medical College of Philadelphia, 1879; formerly medical director of the Henry Phipps Institute; in 1920 was awarded the Laetare Medal by Notre Dame University; founder of the Free Hospital for Poor Consumptives and the White Haven (Pa.) Sanatorium Association and past president; received honorary degrees from the Catholic University of America, Villanova College and St. Vincent College; author of "Consumption, a Curable and Preventable Disease," and "Development of Our Knowledge of Tuberculosis," and also numerous articles on pulmonary diseases; aged 81; died, July 7.

George Emile Neuhaus, Omaha; Bellevue Hospital Medical College, New York, 1891; assistant professor of neurology, Creighton University School of Medicine; at one time assistant professor of neurology and psychiatry, University of Colorado School of Medicine, Boulder; fellow of the American College of Physicians; member of the Central Neuropsychiatric Association; on the staffs of St. Catherine's Hospital, Lutheran Hospital and the Creighton Memorial St. Joseph's Hospital; at one time physician in charge of the Mount Airy Sanitarium, Denver; aged 72; died suddenly, May 15, of cerebral hemorrhage.

Jacob Oshlag ♂ New York; Eclectic Medical College of the City of New York, 1896; College of Physicians and Surgeons, Boston, 1910; served the Manhattan State Hospital in various capacities; consultant physician to the Central Islip State Hospital and attending physician at the New York City Cancer Institute; at one time on the staff of the Bellevue Hospital; was a member of the advisory council of the city department of hospitals; aged 72; died, May 18, of cerebral hemorrhage.

Clarence Snow ♂ Salt Lake City, Utah; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1908; formerly member of the city board of health, state board of health, board of education and board of medical examiners; for many years on the staffs of the Latter-Day Saints Hospital; chairman and member of the board of regents of the University of Utah; aged 63; died, June 27, of cerebral hemorrhage.

Josiah Meigh ♂ Bernardsville, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1899; past president of the Somerset County Medical Society; medical inspector of the township schools for many years and was president of the board of health; on the staff of the All Souls Hospital, Morristown; aged 67; was found dead, May 26, of a self-inflicted bullet wound.

George Gregor Bohrer, New York; University and Bellevue Hospital Medical College, New York, 1908; member of the Medical Society of the State of New York; at one time adjunct professor of pediatrics at the New York Polyclinic Medical School and Hospital; on the staffs of the Seaside Hospital, Staten Island, and Lutheran Hospital; aged 61; died, May 31, of acute myocarditis.

Herman Samuel Gove ♂ Linn, Mo.; Marion-Sims College of Medicine, St. Louis, 1901; director of medical licensure, and for many years director of the department of child hygiene, state board of health; past president of the state board of health and at one time temporary health officer; formerly health officer of Osage County; aged 58; died, June 1, at the Jewish Hospital, St. Louis, of coronary thrombosis.

Edwin Cox Donald, Linden, N. J.; Vanderbilt University School of Medicine, Nashville, Tenn., 1916; member of the Medical Society of New Jersey; served during the World War; formerly police and fire physician; aged 49; on the staffs of the Rahway (N. J.) Hospital, St. Elizabeth Hospital and the Elizabeth General Hospital, where he died, May 15, of carcinoma of the pancreas.

Philip Benjamin Matz ♂ Washington, D. C.; Long Island College Hospital, Brooklyn, 1908; member of the Kansas Medical Society and the American Society of Clinical Pathologists; fellow of the American College of Physicians; chief of medical research subdivision, Veterans Administration; served during the World War; aged 52; died, June 25, in Santa Monica, Calif.

George Anthony Zeller, Peoria, Ill.; St. Louis Medical College, 1879; member of the Illinois State Medical Society; veteran of the Spanish-American War; formerly state alienist; at one time superintendent of the Peoria State Hospital, and managing officer of the Alton (Ill.) State Hospital; aged 79; died, June 29, of cardiac insufficiency and bronchopneumonia.

William Clinton Johnson, Denver; Columbia University College of Physicians and Surgeons, New York, 1909; professor of pathology at the University of Colorado School of Medicine; member of the American Association of Pathologists and Bacteriologists; at one time professor of pathology at his alma mater; aged 53; died, June 24, of cerebral hemorrhage.

Claude Spencer Beebe ♂ Milwaukee; Wisconsin College of Physicians and Surgeons, Milwaukee, 1904; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 60; on the staffs of the Milwaukee Children's Hospital, Milwaukee County Hospital and the Milwaukee Hospital, where he died, May 24, of carcinoma of the transverse colon.

Daniel Gilmore Simpson ♂ Warren, Ohio; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; member of the Radiological Society of North America; was president of the staff of St. Joseph's Riverside Hospital; aged 67; died, April 14, of coronary thrombosis and hypertension.

Allan John Cameron, Herman, Neb.; Trinity Medical College, Toronto, Ont., Canada; 1900; member of the Nebraska State Medical Association; past president of the Washington County Medical Society and vice president of the Nebraska State Medical Association; served during the World War; aged 62; died, May 4, of coronary thrombosis.

Francis Le Sirelle Reder ♂ St. Louis; St. Louis Medical College, 1884; member of the Southern Surgical Association; fellow of the American College of Surgeons; past president of St. Louis Medical Society; consulting surgeon to the Deaconess, St. John's, St. Ann's and St. Louis City hospitals; aged 73; died, May 18, of coronary sclerosis.

James E. Luckey, Wolf Lake, Ind.; Medical College of Indiana, Indianapolis, 1892; member of the Indiana State Medical Association; past president of the Noble County Medical Society; part owner of a hospital bearing his name; aged 72; died, May 14, in the Methodist Episcopal Hospital, Fort Wayne, of disease of the prostate.

Frederick Cameron McIsaac, Chattanooga, Tenn.; Chattanooga Medical College, 1896; member of the Tennessee State Medical Association; formerly health officer of Chattanooga; served during the World War; at various times on the staffs of the Erlanger and Children's hospitals; aged 64; died, May 22.

Vincent Francis Mendillo ♂ New Britain, Conn.; Yale University School of Medicine, New Haven, 1924; fellow of the American College of Surgeons; chairman of the city board of health; on the staff of the New Britain General Hospital; aged 37; died, May 20, of cerebral hemorrhage and hypertension.

John Eugene Black, Shelton, Conn.; Yale University School of Medicine, New Haven, 1908; member of the Connecticut State Medical Society; member of the board of education; aged 57; died, May 30, in the New Haven (Conn.) General Hospital of hypertensive heart disease and bronchopneumonia.

John G. Love ♂ Sedalia, Mo.; Beaumont Hospital Medical College, St. Louis, 1900; past president of the Pettis County Medical Society; member of the American Academy of Ophthalmology and Otolaryngology; formerly on the staff of the John H. Bothwell Memorial Hospital; aged 61; died, May 15.

Frederic James Morrison, Noroton Heights, Conn.; College of Physicians and Surgeons, Baltimore, 1911; served during the World War; at one time member of the board of health of Norwalk; on the staff of the Fitch's Home and Hospital; aged 53; died, May 24, in Norwalk, of intestinal obstruction.

Herman John Brackney, Sheldon, Iowa; State University of Iowa College of Medicine, Iowa City, 1905; member of the Iowa State Medical Society; secretary and past president of the O'Brien County Medical Society; served during the World War; aged 56; died, May 4, of coronary thrombosis.

Lazarus Karp Ⓢ Richmond, Va.; Medical College of Virginia, Richmond, 1909; at one time instructor in practice of medicine and instructor in physiology, clinical assistant in practice of medicine and lecturer on physiology at his alma mater; aged 53; died, May 23, of coronary occlusion.

James Byron Nelson Ⓢ Youngstown, Ohio; University of Louisville (Ky.) Medical Department, 1911; fellow of the American College of Surgeons; past president of the Mahoning County Medical Society; on the staff of St. Elizabeth's Hospital; aged 52; died, May 7, of coronary thrombosis.

Benjamin Edward De Lozier, Maryville, Tenn.; Tennessee Medical College, Knoxville, 1906; member of the Tennessee State Medical Association; served during the World War; formerly member of the state legislature; aged 56; died in May in a hospital at Knoxville, of pneumonia.

William M. Honn, Champaign, Ill.; National Medical College, Chicago, 1899; member of the Illinois State Medical Society; past president of the Champaign County Medical Society; aged 66; on the staff of the Burnham City Hospital, where he died, May 7, of heart disease.

Herbert G. Murray, Owen Sound, Ont.; Queen's University Faculty of Medicine, Kingston, 1896; fellow of the American College of Surgeons; on the staff of the General and Marine Hospital; aged 64; died, April 18, of pneumonia, following an operation for acute appendicitis.

Holland Todd Ground Ⓢ Grants Pass, Ore.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; served during the World War; on the staff of the Josephine County General Hospital; aged 54; died, May 29, of cerebral hemorrhage.

John August Derivaux, Newark, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1908; member of the Medical Society of New Jersey; served during the World War; on the staff of the Memorial Hospital; aged 52; died, May 18, of coronary thrombosis.

William Harvey Higgins, Providence, R. I.; Leonard Medical School, Raleigh, N. C., 1902; member of the Rhode Island Medical Society; past president of the National Medical Association; aged 65; was killed, May 20, when he jumped from the fire escape on the fifth floor.

Flemming Loureston Liggitt, Rankin, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; president of the school board; aged 64; died, May 17, in the Lake View Hospital, Danville, of hemiplegia and cerebral hemorrhage.

Ross Huston Ⓢ Des Moines, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; vice president of the Bankers Life Company and for twenty-two years the medical director; aged 56; died, May 2, of coronary thrombosis.

Arthur Vannevar Pierce, New Bedford, Mass.; Boston University School of Medicine, 1908; member of the Massachusetts Medical Society; served during the World War; formerly school physician; aged 56; died, May 1, in Fairhaven, of coronary thrombosis.

Max Ghertler, Miami, Fla.; Bellevue Hospital Medical College, New York, 1895; member of the Florida Medical Association; formerly member of the board of health of New York; aged 70; died, May 10, in the Jackson Memorial Hospital of coronary thrombosis.

Robert Forrest McKown, Lyman, S. C.; University of Tennessee Medical Department, Nashville, 1894; member of the South Carolina Medical Association; aged 78; died, May 2, in the General Hospital, Spartansburg, of septicemia following the extraction of teeth.

August James Raggi Ⓢ New York; University and Bellevue Hospital Medical College, New York, 1911; on the staffs of St. Vincent's and Columbus hospitals; aged 49; died, May 20, in the Knickerbocker Hospital, of injuries received in an automobile accident.

Isadore Brickman, Alexandria, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1928; member of the Louisiana State Medical Society; superintendent of the State Colony and Training School; aged 35; died, May 15, of angina pectoris.

J. L. Hoover, Beechgrove, Tenn.; University of Tennessee Medical Department, Nashville, 1894; chairman of the county board of education; aged 80; died, May 10, in the Rutherford Hospital, Murfreesboro, following an operation for appendicitis and gallstones.

Leonard Julius Bernstein, Wellsburg, W. Va.; Western Reserve University School of Medicine, Cleveland, 1915; member of the West Virginia State Medical Association; formerly county health officer; aged 49; died, May 5, of subacute bacterial endocarditis.

Melvin C. Hubbard Ⓢ Vestaburg, Mich.; Detroit College of Medicine, 1906; served during the World War; aged 58; on the staff of the R. B. Smith Memorial Hospital, Alma, where he died, May 1, of aneurysm of the left internal iliac artery.

Ulysses Grant Kelso, Vincennes, Ind.; Hospital College of Medicine, Louisville, Ky., 1898; member of the Indiana State Medical Association; past president of the Knox County Medical Society; aged 71; died, May 11, of cerebral hemorrhage.

Lucius Edward MacLaughlin, Cedar Rapids, Iowa; University of Georgia Medical Department, Augusta, 1907; member of the Iowa State Medical Society; formerly county deputy coroner; aged 56; died, May 20, of essential hypertension.

Thomas Louis Fogarty, Brooklyn; Long Island College Hospital, Brooklyn, 1891; on the courtesy staff of the Jewish Hospital and was associated with the Long Island College Hospital; aged 70; died suddenly, May 10, of heart disease.

Robert Carl Humphry, Lapeer, Mich.; Wayne University College of Medicine, 1936; member of the Michigan State Medical Society; on the staff of the Michigan Home and Training School; aged 30; died, May 18, of heart disease.

Ejnar Hansen Ⓢ New York; University of Maryland School of Medicine, Baltimore, 1904; Københavns Universitet Lægevidenskabelige Fakultet, Denmark, 1894; served during the World War; aged 67; died, May 3, of heart disease.

James Allan Matlack Ⓢ Longmont, Colo.; Washington University School of Medicine, St. Louis, 1901; major, United States Army Reserve Corps; on the staff of the Longmont Hospital; aged 63; died, May 22, of coronary occlusion.

William Archie Holloway, Plaquemine, La.; Tulane University of Louisiana Medical Department, New Orleans, 1884; was president of the school board; aged 75; died, May 8, in Rochester, Minn., of carcinoma of the gallbladder.

Milford Arthur Leach, Wauwatosa, Wis.; Bennett Medical College, Chicago, 1911; on the staff of the Milwaukee County Hospital for Mental Diseases; served during the World War; aged 55; died, May 27, of cerebral hemorrhage.

William Henry Knauss Ⓢ Newark, Ohio; Starling Medical College, Columbus, 1897; veteran of the Spanish-American War; on the staff of the Newark Hospital; health officer; aged 65; died, in May, of coronary thrombosis.

William McCurdy Scott, Butler, Pa.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889; member of the Medical Society of the State of Pennsylvania; aged 76; died, April 14.

Frederick Martin Luther, Allenhurst, N. J.; College of Physicians and Surgeons, Baltimore, 1880; on the staff of the Dr. E. C. Hazard Hospital, Long Branch; aged 84; died, May 28, of cardiovascular renal disease.

Alice Honce, Peoria, Ill.; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1904; aged 73; died, May 1, in St. Joseph's Hospital, Kokomo, Ind., of injuries received when struck by an automobile.

Gustav August Miller, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900; on the staff of St. Elizabeth Hospital; aged 71; died, May 6, of cerebral hemorrhage.

Joshua John Ward Flagg, Brookgreen, S. C.; Medical College of the State of South Carolina, Charleston, 1881; aged 77; died, May 8, of chronic myocarditis, chronic nephritis and varicose ulcers of both legs.

Frederick S. McGee, Marietta, Ohio; Starling Medical College, Columbus, 1891; member of the Ohio State Medical Association; for many years city health officer; aged 68; died in May of angina pectoris.

Correspondence

COMMITTEE OF 430: A DISCLAIMER

To the Editor:—Unfortunately it has been widely reported by the press that the Committee of Physicians for the Improvement of Medical Care contemplates the formation of a national organization in opposition to the American Medical Association. The committee desires to state that it has not and has never had any such intention.

JOHN P. PETERS, M.D., New Haven, Conn., Secretary.

TRAUMA AND APPENDICITIS

To the Editor:—"Trauma and Appendicitis" is the subject of an editorial in *THE JOURNAL*, June 4, in which my recent article, "The Rare Incidence of Acute Appendicitis Resulting from External Trauma" is mentioned. The strict criteria demanding actual proof of direct trauma to the appendix, which I have laid down to meet the requirements of primary traumatic appendicitis, are not accepted by the editorial writer. He does accept, however, the purely theoretical and indirect mechanism in this class of case, sponsored by Luddington and others, to which I cannot subscribe, i. e., the expulsion of cecal contents into the normal appendix, the result of a direct blow on the abdomen. The case of primary traumatic appendicitis, the result of this pathogenesis, is a weak one, if one accepts the statement of the editorial writer, namely, "A normal appendix with a free lumen would empty itself of the material forced into it and would probably escape damage." Therefore, when the appendix drained itself, no appendicitis would result. The point is stressed that one never knows the actual condition of the appendix prior to injury. This particular mechanism may apply to an appendix already diseased. It is for this reason that one should speak of primary traumatic appendicitis only with the greatest caution and reserve. If the trauma merely reactivates an already crippled appendix, it cannot be held to be the primary cause of the disease. The correct nomenclature is "acute traumatic appendicopathy." An injury precipitating a recurrent attack or arousing a dormant lesion is not the essential cause of the disease.

If a true traumatic lesion is found at immediate operation without microscopic verification of appendicitis, the condition should clearly be designated according to the lesion present, subserous hematoma, laceration of the mesentery, and so on, as the case warrants. If the appendicular artery is torn and nutrition cut off, one may expect the usual sequence of acute pathologic changes. If these changes are demonstrated microscopically, only then can they be linked with the traumatic lesion and the case be called, in the absence of old pathologic conditions in the appendix, and with absence of previous attacks, as elicited in the history of the patient, acute primary traumatic appendicitis.

The editorial states that "the exact mechanism of traumatic appendicitis has not been elucidated." In spite of this statement the editorial writer is an advocate of the acceptance of a "far more plausible theory" than a fact finding enquiry. Critical postulates are denied. This advocacy permits doctors to go on the witness stand and subscribe to a fanciful theory utterly lacking in proof. In one half of the litigated cases, the courts have given a decision to the plaintiff. This does not mean that doctors at large are equally divided in this matter by any means, as shown by my survey of current surgical thought. Doctors are engaged as experts with the distinct objective that they will be helpful to the plaintiff or defendant, as the case may be. My analysis of forty-eight court decisions leaves me with the belief that, from the medical standpoint, some were unjustified and

influenced by biased expert testimony. One trial is recalled in which a recent graduate testified to having seen hundreds of cases of traumatic appendicitis. The late John B. Deaver, in his wide experience, had never seen a single genuine case. This indicates the wide variation of opinions and shows the difficulty presented to deputy commissioners and juries.

The editorial statement that the consensus favors a primary cause and effect is not borne out by my survey. In the analysis of 243 opinions expressed by distinguished abdominal surgeons at home and abroad, including three leading surgical societies, 20 per cent deny any relationship whatever between trauma and appendicitis. Of the remaining 80 per cent who grant a traumatic influence, but 24 per cent acknowledge a primary influence—less than half of those who believe a secondary or aggravating factor may be found in trauma (56 per cent).

If trauma does precipitate an attack of appendicitis, which according to the editorial writer is the pertinent question, it must be satisfactorily explained and duly proved. The expert should deal with facts and not highly speculative theories. The occurrence of acute primary traumatic appendicitis is not denied, but, to accept it, the most strict criteria are essential for just adjudication of claims.

The subject is extremely controversial. In *Queries and Minor Notes* in the same issue, June 4, the question is asked "Can acute or subacute appendicitis be brought on by injury such as a fall from the stairs?" The following answer is given in part, apparently by another writer: "At the present time, one cannot state definitely that inflammation of a previously healthy appendix can be brought on by an injury, but there is considerable evidence to indicate that it may be a factor in aggravating a previously existing inflammation."

ROYAL H. FOWLER, M.D., Newark, N. J.

COMMENT.—Briefly, the editorial enumerates three existing divergent opinions as to the causal relationship between trauma and acute appendicitis and states that, while the mechanism of traumatic appendicitis has not been clearly elucidated, it is probable that overdilatation of the organ by the influx of the cecal contents is a more likely explanation than that of a direct traumatization of the appendix or its mesentery. It states further that the existence of previous pathologic conditions in the appendix favors this mechanism and that procrastination in the presence of a history of trauma to the abdomen, particularly to the right lower quadrant, followed by a clinical picture of an acute abdominal catastrophe, is inadvisable.

The editorial assumes a middle position, namely, that trauma can cause an attack of acute appendicitis in the presence of previous pathologic conditions of that organ. It expressly states that "a normal appendix with a free lumen would empty itself of the material forced into it and would probably escape damage. In the presence, however, of chronic pathologic conditions there exist conditions favorable to development of acute appendicitis." The editorial nowhere endorses the position that trauma can cause acute appendicitis in a previously normal appendix, and nowhere does it speak of a "primary" traumatic appendicitis. It poses the whole question in the following sentence: "The pertinent question is not whether trauma can originate an initial attack of appendicitis or whether its effect is that of lighting up dormant pathologic conditions. It is, rather, whether or not trauma can precipitate a clinical attack of acute appendicitis." It is worthy of notice that in most of the cases reported in the literature the operation was either delayed or not at all undertaken because the surgeon did not think of the possibility of acute appendicitis following trauma.

In rereading Dr. Fowler's exhaustive article, one fails to find either in his collective review or in his summary any contradiction to the statements expressed in the editorial. In the

Survey of Current Surgical Thought, Dr. Fowler presents a significant analysis of 243 opinions, 20 per cent of which deny any relationship, 56 per cent of which admit a secondary influence and 24 per cent of which grant a primary influence. The editorial disagrees with Dr. Fowler's postulate that, "in order to admit the contributory or aggravating influence of trauma, the operative findings should show, conclusively, either genuine traumatic pathology with an added acute appendicitis or unquestioned pathology antedating the injury, with superimposed acute appendicitis."

Since the editorial does not defend the theory of primary traumatic appendicitis, it need not defend itself on this point. It is pertinent to remark, however, that not less than 24 per cent of the opinions analyzed by Dr. Fowler acknowledged a primary influence.

ACTION OF HYPOGLYCEMIA ON THE CENTRAL NERVOUS SYSTEM

To the Editor:—Gellhorn's paper entitled "The Action of Hypoglycemia on the Central Nervous System and the Problem of Schizophrenia from the Physiologic Point of View" in *THE JOURNAL*, April 30, is so conspicuously lacking in any reference to the work of Petersen, a member of the same faculty as Gellhorn, that some comment seems in order.

Petersen's massive researches have been appearing in volume form since 1934 as "The Patient and the Weather" and the series is not yet completed. He showed (1934, volume III, pp. 295-304, and 1936, volume I, part 2, pp. 194-195) from a careful day by day study of patients, certain biochemical differences that existed between the manic phase of manic-depressive psychosis and the schizophrenic status. He definitely associated the "COD" phase of metabolism (catabolism, oxidation, dilatation) when blood is relatively acid, hypoglycemic and hypertonic, with accentuation of schizophrenic symptomatology. He also associated the opposite "ARS" phase (anabolism, anoxemia, alkalosis, reduction, spasm of vascular bed) when blood is hyperglycemic with the onset of manic symptoms in manic-depressive psychosis.

Gellhorn says: "It is to be expected that insulin improves schizophrenic patients . . . (1) by reduction in the oxidation rate in the central nervous system and (2) by the stimulation of the sympathetic centers resulting from the diminution of the oxidative metabolism."

Petersen discussed the role of anoxia under "The Transition from Normal Function to Intermittent Organ Dysfunction" (1937, volume IV, part 1, p. 147).

Müller and Petersen, in a series of papers over ten years ago, called attention to the epinephrine-like action of insulin, stating specifically that in insulin shock there exists a sympathetic overtonus in the vessels of the splanchnic region and that the autonomic disturbance which occurs probably takes origin in the splanchnic region and is directly associated with the glycogen deprivation of the liver (Analogous Action of Insulin and Epinephrine on the Liver, *Proc. Soc. Exper. Biol. & Med.* 22:47, 1925; Glycogenolytic Action of Insulin, *THE JOURNAL*, Sept. 12, 1925, p. 820; Ueber den Insulin Schock, *Klin. Wchschr.* 5:53 [Jan. 8] 1926; Ueber Anderungen in der Permeabilität nach Insulin, *Ztschr. f. d. ges. Exper. Med.* 54:415, 1927).

Gellhorn writes: "It seems that physiologic research has opened up a new and promising road to combat not only schizophrenia but also other psychoses, such as the manic-depressive psychoses in which vegetative disturbances are very prominent." If the word "new" is applied to Gellhorn's recent investigation and conclusions, it appears to me to be erroneous; if it includes the work of Petersen and others, why not say so?

JOHN FAVILL, M.D., Chicago.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

CHRONIC BACILLARY DYSENTERY

To the Editor:—In a series of dysentery cases the Flexner bacillus has been found in cultures from the stools. Will you please outline the most reliable therapy to rid the intestinal tract of this infection? Many other cases have given positive agglutination reactions to the Flexner bacillus in low dilutions of serum. Could you suggest any measures to combat the possible chronic form of the disease, in which these very patients may be carriers but symptom free most of the time, with the stool not containing the bacilli? I am most anxious to have some fairly rapid medication to cure the positive cases.

M.D., California.

ANSWER.—If the cases are acute one may resort to the Flexner bacillus antidysenteric serum, beginning with 10 cc. intramuscularly in a patient tested for sensitivity, with 15 cc. the next day and 20 cc. the next day, the latter dose to be kept up until from 150 to 175 cc. of the serum has been given. The diet, in any case, should be a nonresidue, high caloric diet. The use of bismuth salts should be avoided, as they may "cake" in the bowel and produce pressure ulceration. If the case is more chronic, one should give Flexner bacillus vaccine, 1,000,000,000 organisms to the cubic centimeter, beginning with a dose of 0.05 cc. three times a week for three weeks, then twice a week for three weeks and then once a week for from six to eight weeks. Increase the dose 0.05 cc. each time. If reaction occurs, reduce to the previous dose and increase again subsequently. Do not exceed a 1 cc. maximum dose. Repeat the course of vaccine every six months for two years, as a prophylactic measure. This course should last from two to four weeks when given. For irrigations one may use weak dilutions of copper sulfate ($\frac{1}{25,000}$ or $\frac{1}{80,000}$) as retention enema.

MERCURY POISONING IN MINING

To the Editor:—1. How common is mercurial poisoning in the process of extracting gold from ore? 2. Is it possible for a person to be acutely poisoned by mercury vapor from this process during a single day's work? 3. If such poisoning occurred, would it be consistent to have a loss of teeth or stomatitis beginning almost at once and giving no sign of such damage four or five months later, other than absence of teeth? 4. Assuming that the condition in 3 is possible, would not this be accompanied by constitutional symptoms; and, if so, how long would it normally take them to clear up without treatment? 5. Is there anything in the occupation of hard rock mining which might bring about a cumulative mercurial condition? 6. Would it be possible to determine several months after such a supposed poisoning had occurred whether or not this might have been due to lead poisoning or some other heavy metal?

M.D., Wyoming.

ANSWER.—1. Mercury poisoning in the trade process mentioned is on the wane, owing to the substitution of other trade practices that eliminate the use of mercury. Where the mercury amalgamation process still is employed, the frequency of mercurialism depends to some extent on whether mercury is recovered by distillation and whether the operations are carried on indoors or out. At normal temperatures, metallic mercury continually emits vapors. Higher temperatures increase the rate of mercury vapor production. In general, mercurialism in this trade has been sufficiently frequent to attract the attention of all older writers in the field of occupational diseases.

2. Yes, given sufficiently high concentrations of mercury vapors, poisoning may be produced within three or four hours of exposure.

3. Stomatitis is the principal manifestation of severe mercurialism following brief contact with mercury compounds. Gelman and Derviz published an article in the *Journal of Industrial Hygiene and Toxicology* (19:215 [June] 1937) which indicated that as far as mercurial vapor poisoning is concerned the most constant symptom is tremor and effects on the central nervous system. In addition, some few, at least, of various other possible manifestations may reasonably be expected, such as diarrhea, nausea, vomiting, tetanus, albuminuria, oliguria, abdominal pain, blood changes and dermatoses.

4. As a rule, yes, as already discussed; but Hamilton states that "industrial mercurialism is characterized by three features: inflammation of the mouth, muscular tremors and psychic irritability—sometimes all three together, sometimes only two, or

only one." Some of the manifestations of severe mercurialism may never disappear, with or without treatment.

5. Hard rock mining inherently has nothing to do with mercurialism, unless hard rock contains some form of mercury as a constituent. Hard liquor may have much to do with precipitating clinical mercurialism when exposure is provided.

6. Mercury is eliminated from the body quite slowly but it may not be always possible to establish evidences of mercury above normal traces in the urine. Thus Neal and Jones (*THE JOURNAL*, Jan. 29, 1938, p. 337) state that "Analyses were made on the urine of nine of the ten persons who had the most advanced symptoms of chronic mercurialism. Only three had mercury in the specimen submitted for examination." Methods for the determination of urinary mercury are described by Koelsch and Ilzhofer in a series of publications in the *Zentralblatt für Gewerbehygiene und Unfallverhütung*, beginning with the January 1919 issue. Methods for the determination of mercury vapors in a workroom have been described by Biggs in the *Journal of Industrial Hygiene and Toxicology* (20:161 [Feb.] 1938).

UNDERTREATMENT IN LATENT SYPHILIS

To the Editor:—On various occasions, certain persons with latent syphilis are forced against their will to undergo antisyphilitic treatment. Many of these patients disappear after receiving bismuth salicylate and nearsphenamine injections weekly for from one to five weeks or so. It is legally impossible for me to detain them. Although I have never run across a corroborative statement, it has always been my contention that if it is known definitely that the patient will receive only bismuth and nearsphenamine injections weekly for one to five weeks, he will fare better with no treatment at all. These few injections will act in a provocative way and will probably stir up the latent infection, and possibly the result will be an infectious relapse in a large number of cases. In "Standard Treatment Procedure in Early Syphilis" (*THE JOURNAL*, April 21, 1934, p. 1267) the authors state that 64 per cent of those patients who received only one to four injections of an arsphenamine with heavy metal relapsed. However, most of these were cases of early syphilis. Do you agree with my conclusion: i. e., that if it is definitely known that a patient with latent syphilis will receive only from one to five treatments of bismuth and nearsphenamine he is better off with no treatment at all?

M.D., Ohio.

ANSWER.—Relapse, infectious or otherwise, is much less frequent after the inadequate treatment of latent than of early syphilis. It is not definitely known whether treatment consisting of only one to five injections of an arsphenamine and a heavy metal is harmful to patients with late latent syphilis (i. e., syphilis of more than four years' duration, after the establishment of the patient's own immune reactions), but it certainly will not do much good. If it is possible to be sure in advance that the patient will submit to only one to five weeks of treatment, it might be just as well to withhold all treatment as wasted time, energy and money. Persuasion rather than force, however, will do much to hold to treatment even patients with latent syphilis, if it is intelligently applied.

REMOVING FORMALDEHYDE FROM LEATHER

To the Editor:—Are there any methods available for removing formaldehyde from shoes that have been fumigated or does formaldehyde combine with leather to form a stable compound?

L. A. LASHER, M.D., Erie, Pa.

ANSWER.—The method of action of formaldehyde as a disinfectant is believed to depend on direct combination with albumins with the formation of new compounds. Rosenau says: "Formaldehyde unites directly with protein matter to form new compounds of an undetermined nature. It hardens tissue so that it will render fish and meat tough and brittle." It is well known that formaldehyde injures leather by making it brittle. However, in the case of leather, most of the albumins of the hide or skin utilized already have been coagulated by tannins. Only the portion of uncoagulated albumins will be affected by the formaldehyde. Customarily, leathers are dressed with animal oils—usually fish oil. It is believed that the formaldehyde to some extent makes leather brittle by combining with these animal oils. In any event that portion of the formaldehyde which combines with some constituent of leather will lose its characteristic offensive odor. In specific reply to this query, it is noted that not all of the formaldehyde that comes in contact with shoes ever may be fully removed and that formaldehyde is not a suitable disinfectant for leather articles because of damage to them. However, repeated airings customarily will dispose of the irritant odors of formaldehyde even though some irritant properties may be retained in the leather. It is also possible that, if the shoes have only recently been treated with formaldehyde, the odor can be removed by a solution of urea 150 Gm., ammonium phosphate 30 Gm. and enough water to make 3 liters.

HYPERTENSION, SYNCOPE AND HEART BLOCK

To the Editor:—A white woman, aged 70, moderately obese, has had a hypertension (150-200/80-110) for years. Five years ago she had a complete heart block which subsequently disappeared. She has rare precordial flutterings associated with rapid pulse, but usually the pulse rate is between 70 and 80. The heart is moderately enlarged, there is dyspnea on exertion and activity is usually limited to from six to ten hours a day. The ankles have never pitted on pressure. The Kahn test is negative; on one or two occasions a trace of albumin has been found in the urine; constipation is moderate. There is often a bitter taste in the mouth, usually associated with a coated tongue, sometimes helped by calomel and soda. During the last seven years she has had seven attacks of syncope, in all but the last of which she lost consciousness completely. The symptom which I do not understand is a gradual blurring of vision, inability to read, and the appearance of a wavy line which she describes as like the luminous wire of an electric light after it has been turned out. This train of symptoms precedes by days or weeks the attacks of syncope and recurs until the fainting occurs. She doesn't know whether her heart flutters at this time or not. There is no pain and no unusual dyspnea but moderate apprehension. Besides calomel and soda, she has had digitalis, potassium iodide, mistletoe and bromides, together with vitamins and minerals to supplement her rather limited diet. I would appreciate it if you could help me determine the significance of the eye symptoms and the bitter taste.

M.D., Illinois.

ANSWER.—The objective evidence in this case points to the diagnosis of hypertensive, coronary heart disease with cardiac enlargement and heart block, but no failure. The heart block has evidently been variable.

The symptoms can in part be ascribed to the observations noted. Certainly it is possible to interpret the attacks of syncope on the basis of the heart block even though it is not constant. In fact, it is a little more usual to have such so-called Adams-Stokes attacks in patients who do not maintain complete heart rhythm. The eye symptoms can also be credited to the defective heart rhythm. She may at times have a moderate degree of block and bradycardia with nothing more than the change in vision. This would be particularly suggested by the fact that the visual disturbances tend to precede actual syncope. A less likely cardiac cause for the visual disturbance and fainting would be paroxysms of tachycardia or flutter with marked increase in rate, enough to be responsible for cerebral anemia. There is also the possibility of a hypertensive encephalopathy (cerebral vascular spasm or minor lesions) but that is less likely.

Finally there is the possibility of the toxic effect of digitalis or other drugs. There is no statement as to how much digitalis she has used. If she has had a good deal the drug might tend to increase the degree of block or in itself produce the eye trouble and even the bitter taste in the mouth. The coated tongue that is associated with the bitter taste points to a disturbance of digestive function which might or might not be the result of the toxic effect of drugs but could not be attributed directly to a disturbance of heart rhythm or heart weakness. A careful correlation of these symptoms with the amount of digitalis taken, an experimental withdrawal of all medicines, or the use of ephedrine 0.03 Gm. three times a day to control the heart block would be helpful in making certain about these points.

TESTS FOR RICKETTSIAE AND SPOTTED FEVER

To the Editor:—Please give information available on the latest tests for Rickettsia hodies, especially for typhus, Rocky Mountain spotted fever and trench fever.

M.D., Ohio.

ANSWER.—The Weil-Felix test and guinea pig inoculation tests are used for the diagnosis of typhus and Rocky Mountain spotted fevers. For the Weil-Felix test, the serum of the suspected case may be tested in dilutions from 1/10 to 1/1,280 or higher against an antigen prepared by treating a saline suspension of the growth of Proteus X-19 on agar with solution of formaldehyde. At the same time guinea pigs may be inoculated with 1 cc. or more of the patient's blood. This is followed by an elevation of temperature in from six to fourteen days with characteristic testicular or scrotal lesions. Infection of guinea pigs with Rocky Mountain spotted fever usually leads to a fatal outcome, infection with typhus rarely. The relationship of Rickettsiae to trench fever is not definitely established but it is probable that the etiologic agent belongs to this group. Also the disease cannot be produced in laboratory animals and little is known as to the behavior of the Weil-Felix test in this disease.

The Rickettsiae of all three of these diseases can be demonstrated in the blood only with great difficulty. However, the Rickettsiae of endemic typhus may be demonstrated rather readily in the tunica vaginalis of infected guinea pigs.

FIRE EXTINGUISHERS FOR ROENTGEN RAY
DEPARTMENTS

To the Editor:—In THE JOURNAL, April 16, 1938, on page 1303, there is a question regarding the danger from burning motion picture films. I am advised by the city fire department that we must have carbon tetrachloride extinguishers in our x-ray department. They admit that there is some danger from gas in case of fire but state that the soda acid type extinguisher is much more dangerous, owing to the possibility of electrical shock in the use of a soda acid extinguisher around electrical equipment. Can you tell me what type fire extinguisher should be used in an x-ray department?

Hospital Manager, Colorado.

ANSWER.—No simple type of fire extinguishing equipment for use in x-ray rooms is wholly lacking in dangerous possibilities. The common soda, acid, water extinguisher is to be avoided because streams of such solutions are conductors of electricity, and electrical shocks may take place. Also such extinguishers lead to greater damage of equipment. These statements apply to any watery solution or suspension such as foaming licorice in water.

In any large x-ray establishment, such as in the manufacture of these units, carbon dioxide extinguishers are recommended. Carbon tetrachloride extinguishers are the most practical and are recommended by most fire departments. This material does not readily conduct electric current nor is it injurious to equipment, such as motors. In fact, electric motors and similar apparatus are cleaned in the ordinary course of repair by carbon tetrachloride or similar chlorinated hydrocarbons.

This useful fire destroyer is, however, dangerous. Its vapors in concentrations above 100 parts per million of air may produce damage. When the concentration reaches 1,000 parts per million, immediate injury is in prospect for persons who may breathe this vapor even for a few breaths. Naturally, heat increases the evaporability of carbon tetrachloride. When in contact with high temperatures such as an electric arc, hot metal or a flame, carbon tetrachloride may decompose, leading to the presence of phosgene, which is more toxic than the carbon tetrachloride.

X-ray rooms ordinarily should be equipped with sprinkler heads, if such a system is present in the office building or hospital.

Along with sprinkler heads, if such are available, or in their absence, one may depend on the carbon tetrachloride variety of extinguisher. They are theoretically dangerous but rarely ever lead to an accident. Manufacturers boast that, among millions that have been used in fires, proved fatalities have not arisen. In short, one should use carbon tetrachloride on the fire as quickly as possible and then leave the exposure area, taking along all persons. One should not reenter except as instructed by qualified firemen.

In case nitrocellulose films are used, added problems arise.

LOW HEMOGLOBIN

To the Editor:—What are the lowest limits compatible with life to which the hemoglobin and the red cell count may fall and recovery ensue? What are the lowest hemoglobin and red cell counts reported in the literature in cases in which operation has been performed with recovery? I recently successfully operated on a patient suffering from a bleeding peptic ulcer, with hemoglobin of 14 per cent. I should appreciate any references you have available on this subject.

MAX N. HOROWITZ, M.D., Bronx, N. Y.

ANSWER.—It is difficult to answer this question accurately. One thing may be stated without fear of contradiction: successful operation on a patient with 14 per cent hemoglobin does not establish a record.

T. S. Cullen (*Surg., Gynec. & Obst.* 17:276, 1913) reported a series of operations on patients with 40 per cent hemoglobin or less. Among the patients who recovered, fourteen had hemoglobin of less than 20 per cent. The lowest hemoglobin in this group was 10 per cent at the time of operation. This patient recovered from a hysterosalpingo-oophorectomy. No transfusion was given.

J. F. Baldwin (*Am. J. M. Sc.* 170:118 [July] 1925) mentioned one patient who entered the hospital with a hemoglobin of 12 per cent. Just preceding operation she had a rather sharp hemorrhage and no record was made of the hemoglobin just before operation but because of the hemorrhage it was assumed that it must have been less than the previous day's reading. She successfully withstood a panhysterectomy without transfusion.

It is doubtful that records approximating these will be found in the recent literature. Since blood transfusion has reached its present state of efficiency, major surgical procedures are rarely undertaken with the hemoglobin below 35 to 40 per cent without transfusion first being performed. Chronic hemorrhage is no contraindication to transfusion; indeed, transfusion is believed effective in checking hemorrhage.

It should be mentioned that the hemoglobin percentage is a poor index of surgical risk. Readings under 20 per cent are difficult to make with accuracy. At this level readings of the same blood by two persons, or readings by the same person on two different occasions, may result in a difference of 5 per cent either way. Immediately following acute hemorrhage the hemoglobin percentage remains relatively high and yet the patient is a poor risk because of his diminished total blood volume. A patient with a low hemoglobin that appears a day or two after acute hemorrhage is a much poorer risk than the patient with an identical hemoglobin as a result of long continued chronic hemorrhage. Many things apart from the hemoglobin percentage must be considered before assessing the surgical risk.

The same is generally true of the red cell count. It is probable that the lowest red cell counts appear in pernicious anemia. Counts of 500,000 cells per cubic millimeter may be followed by spontaneous remission. In aplastic anemia or chronic hemorrhagic anemia such counts are rarely reached before death ensues. On the other hand, acute hemorrhage may be fatal when the cell count per cubic millimeter is not far from normal.

ALLERGY OR IRRITATION FROM CHALK

To the Editor:—Can chalk be antigenic, or are its irritant qualities purely mechanical?

M.D., Illinois.

ANSWER.—Chalk is a variety of limestone rock, composed almost entirely of the calcareous remains of minute marine organisms and fragments of shells. The purest kinds contain up to 99 per cent of calcium carbonate in the form of the mineral calcite. Silica is always present in small amounts. Minute grains of quartz, feldspar, zircon, rutile and other minerals are also present. Chalks vary considerably in composition, color and texture. French chalk and talc are hydrated magnesium silicate.

A search of the literature revealed no proved instance of antigenicity from any variety of chalk; its well known irritant qualities are probably purely mechanical. Asthmatic persons and those who have perennial rhinitis frequently complain that chalk dust brings on or aggravates their symptoms. It seems likely that chalk dust acts as a contributory factor just as do many other dusts and fumes. The impurities in chalk may possibly be a factor. The small amount of silica present in chalk could hardly be a cause of silicosis in those who use it; those who produce it, however, are more likely to have symptoms.

BURNS FROM ACETYLENE WELDING

To the Editor:—Several patients whom I have had have developed severe infections after burns received in the process of oxyacetylene welding, even though they had received immediate medical attention. I am told that the flux used and the coating of the welding rod are both extremely poisonous. I am interested in knowing what possibly poisonous materials are used in the process and whether burns resulting from welding are more susceptible to infections than others.

M.D., Ohio.

ANSWER.—Infection of burns after acetylene welding has not attracted widespread attention because of any high incidence. The welding and flux rods vary widely as to constituents. Likewise, the metals that may be welded may represent a wide difference as to makeup. As many as 100 different types of rods are in use and these may contain phosphorus, magnesium, sulfur, titanium, cadmium, manganese, zinc, lead, silica, silicates, chromium, copper, borates and divers organic compounds. The metals welded may have been galvanized previously, may contain chromium and certainly contain minute traces of a high diversity of impurities. Notwithstanding, it is not believed that any of these substances would be prominent in bringing about an increased proneness to infection. Some theoretic consideration might be given to the presence of ultraviolet rays, which, like intense sunlight, may bring about inflammation. This factor may be minimized since the ultraviolet light from oxyacetylene welding is much less than from arc welding, in which operation the injurious effects of ultraviolet rays are well known as a source of injury to the eyes. The most practical possibility centers about the presence of dust and larger particulate matter connected with at least some oxyacetylene work, particularly oxyacetylene metal cutting. When a burn takes place on a skin area so covered with foreign particles, obviously infection is favored and suitable surgical cleanliness is obtained only with difficulty. It is believed that better results will arise in the case of this type of burn provided thorough mechanical cleansing of the wound is procured.

THALAMIC SYNDROME WITH HEMIPLEGIA

To the Editor:—A woman, aged 50, with diabetes, had a cerebral hemorrhage about three months ago, with the development of flaccid paralysis involving the face, tongue (right side) and the right upper and lower extremities. She had a hypertension of about 220 systolic and 120 diastolic for many years preceding this hemorrhage. Recovery from the acute phase was without incident. The tension, in spite of continued bed rest, is still about 200 systolic and 120 diastolic. The urine is negative for albumin and casts. Dizziness was the most distressing symptom following the acute phase, but the severe lancinating pain in the right upper extremity, apparently without remission, is the most distressing symptom now present. The pain in the extremity is hardly influenced by sedatives. The arm now has a spastic paralysis, although there is some painful motion. There is a hyperesthesia of the upper extremity. The pain is so severe that the patient has threatened suicide. Physical therapy of many forms has been of no avail. Do you believe this pain is of central or peripheral origin? In the last two days there has been, in addition to the spasms of pain, a burning feeling over the whole extremity. Do you believe that these phenomena are evidences of nerve degeneration? Would alcohol injection of the part of the brachial plexus supplying this area have any value? Is vitamin B indicated by injection? Do you think that snake venom, as used for pain in carcinoma, would relieve the pain in this instance? Is pain following cerebral hemorrhage a usual phenomenon, or is this evidence of thalamic involvement?

M.D., New York.

ANSWER.—The patient is undoubtedly suffering from one of the forms of the thalamic syndrome often associated with flaccid or spastic hemiplegia. The pain, therefore, is central in origin. It is often characterized by hyperesthesia, with burning sensations over the affected region. There is usually a defect in deep sensibility, which is more affected than light touch. The pain centers, however, are the ones most particularly changed, for the spontaneous pains are often intractable and agonizing in character. Analgesic drugs are usually ineffective. The arm or leg may be hypersensitive with such a perversion of sensation that the lightest touch or a breath of air will cause exquisite discomfort. Patients have sought amputation of the offending extremity as a means of relief, and suicide as the result of the continued pain is not unknown.

In view of the central nature of the lesion, alcohol injections of the brachial plexus would not be indicated, nor would vitamin B affect the patient's discomfort. The use of snake venom, so far as has been determined, has not been tried. Wrapping the arm in cotton wool, or even painting it with collodion, has sometimes been efficacious in preventing external stimuli, which seem to be involved, at least in part, in stimulating the pain.

LOCALIZED SCLERODERMA

To the Editor:—A white woman in her early twenties, a beauty shop operator, complains of numbness and a heavy feeling in the right arm; at times she has some pain in the upper outer quadrant of the right breast. About two months ago she noticed three small spots on the anterior surface of the right forearm about 3 inches above the wrist. Several months ago I treated her for a menstrual disorder; this has been entirely corrected. On the anterior surface of the right forearm there is an indurated yellow streak, from 0.5 to 1 cm. wide, extending from a point about 3 inches above the wrist to the elbow. The induration appears to be in the deeper layers of the skin, is not tender and gives the impression of a phlebitis from the feeling. She says that at times this streak is purple. On the upper part of the right shoulder there is a similar indurated area about 8 by 10 cm.; just below and to the outer side of the angle of the right scapula there is another area slightly smaller than the one on the shoulder; on the outer side of the right breast there is an area 3 by 4 cm. None of these places are tender. All have a rather glistening appearance and all have a peculiar doughy feeling. She has to use a good deal of force with the right arm in her work. Please let me know what you think this condition is, what treatment to use, and the prognosis.

M.D., Alabama.

ANSWER.—The query gives a good description of localized scleroderma, or morphea. It is quite generally agreed that the skin in scleroderma contains an excess of calcium but there is no agreement as to how this is brought about. Some think that it is due to the overactivity of the parathyroid glands, but arguments against this view have been presented by Cornbleet and Struck (Calcium Metabolism in Scleroderma, *Arch. Dermat. & Syph.* 35:188 [Jan.] 1937). Some years ago Leriche and Jung advised giving ammonium chloride in 1 Gm. doses three times a day combined with a ketogenic diet in order to facilitate excretion of calcium from the skin. The administration of thyroid extract has long been a favorite method in the treatment of scleroderma. Others give parathyroid extract, extracts of the mesenteric glands or raw pancreas. Cornbleet and Struck used vitamin D in doses of from 200,000 to 300,000 international units daily for four months with improvement, but no case was wholly clear in that time. They do not recommend the method as a treatment but feel that it is of value in the study of the disease.

Local scleroderma tends to heal spontaneously in from months to years, sometimes ten years or longer. The prognosis is good except for the possibility of atrophy remaining after the hardening of the skin disappears. Particularly are the linear lesions likely to leave atrophy. The lesions may be massaged with some oil or ointment, cod liver oil, lard, wool fat or any other. Ten per cent of boric acid and wool fat in rose water ointment is a good mixture. Electrolysis as for removing hair with the application of a mercury-containing plaster between treatments is used; but it is usually thought that the local form of the disease does not warrant strenuous treatment. It is well to warn the patient of the possibility of atrophy resulting from the disease.

SPONDYLOLISTHESIS

To the Editor:—In "Disability Evaluation" by Earl D. McBride (ed. 2, Philadelphia, J. P. Lippincott Company, 1938) on page 492, there is an x-ray reproduction of a case of spondylolisthesis with no history of injury, and on page 498 is another x-ray reproduction of a case with a compression fracture on the first lumbar vertebra with the statement: "Note the congenital spondylolisthesis of the fifth lumbar on the first sacral vertebra. There were no symptoms in this region." On page 500 there is a paragraph concerning spondylolisthesis and there is the statement: "It should be classed as a congenital anomaly and not a fracture dislocation. While this condition is of a congenital nature, it might be associated with injury." I have been under the impression that spondylolisthesis is always the result of trauma, although the factors which predispose, such as spina bifida occulta or a separate neural arch, are of course congenital. Is spondylolisthesis ever considered to be congenital and may it occur without definite trauma?

M.D., Illinois.

ANSWER.—The term spondylolisthesis was coined by Killian, who considered the condition to be a gradual dislocation or slipping. In reality only the body and anterior portion of the arch slips, while the posterior arch and spinal processes may remain in their normal positions. The causation may be hereditary, congenital, traumatic or postural. It is primarily an anomaly of congenital origin, but the actual displacement is due to a superimposed trauma. No instance of true congenital spondylolisthesis, that is, a newborn child who had an actual displacement, has been found.

The lesion is in the nature of a separation of the neural arch. This has been brought out by the classic studies of Wilks of Cleveland, who found this condition in 4.8 per cent of 850 specific examinations. As many as six affected persons in one family have been observed.

Spondylolisthesis means a pseudarthrosis at the junction of the neural arch and vertebral body. This produces a pseudo-spondylolisthesis, which becomes a true spondylolisthesis by the action of trauma such as diving.

About 38 per cent of Meyerding's large series of patients ascribed the cause of their trouble to trauma. In Henry's cases all the accidents were of a similar mechanism; i. e., landing on the buttocks in the sitting position, with the spine erect. Meyer-Burgdorff concluded that spondylolisthesis is due to acquired chronic bone changes with fissure formation of the arch and not congenital. In twelve of Chandler's eighteen cases the onset of symptoms was abrupt and in all but one of these was associated with definite trauma in the nature of a striking increase in the shearing strain.

STILLBIRTH FOLLOWING ELECTRIC SHOCK

To the Editor:—A secundigravida at term received a severe electric shock while in the bath room from a shock in some electrical modality and immediately afterward she did not feel "life" in the uterus. Two days later stillborn twins were delivered, both of normal color but without heart beats and without respiration. Could this electric shock have been the cause of the fetal deaths, especially since the first child was of normal birth 18 months before? E. J. GUGGLE, M.D., Morenci, Ariz.

ANSWER.—It is unlikely that an electric shock could kill a fetus in utero without seriously burning or electrocuting the mother. In all likelihood, intra-uterine death of the twins was caused by some pathologic condition and had nothing to do with the electric shock that the mother received.

MARRIAGE BETWEEN WHITE WOMAN AND GRANDCHILD OF MULATTO

To the Editor:—A white woman desires to marry a man whose grandmother was a mulatto. The girl's parents object to the marriage for fear of a Negro offspring. I told the girl that I thought this impossible but desire to have an authoritative statement.

M.D., New York.

ANSWER.—There is no possibility of such a mating as that described resulting in a Negro offspring. A trace of negro coloring or features might however appear.

SUDDEN DEATH IN PREGNANCY

To the Editor.—A woman, aged 45, whom I have attended for the past twenty years and delivered of her five living children, has had diabetes mellitus for three years. She reported to me last September for pregnancy (three months). I saw her again in November and January. She was progressing satisfactorily with just a trace of sugar in the urine. February 4 when I called at her home she was lying in bed complaining of being too tired to be up, of weakness and of no appetite. At the hospital the next day the blood sugar content was 111 mg. per hundred cubic centimeters and the urine was normal. February 7 her husband called at 6 a. m. stating that her membranes had ruptured and that pains occurred every three minutes. I arrived at her home about 6:30 and found her sitting on a chair. She was having chills and sweats and was short of breath and very weak. When I asked her to get in bed to be examined she said to wait, for she was too weak and short of breath to move. After a few minutes she lay down but couldn't stay down because of a marked dyspnea, which was getting worse. Examination revealed the cervix dilated but no fetal heart sounds. The patient began to cough (frequent and short) and suffered from sweats, increased dyspnea and a rapid pulse; pains came and went with no progress, until she died within forty-five minutes, with the baby undelivered. Should I have done a cesarean section immediately after death to attempt to save the baby? Would I be open to criticism in such an emergency? What would an obstetrician do under the same circumstances? What would be your opinion as to cause of death in this case?

M.D., Pennsylvania.

ANSWER.—It is hardly likely that the diabetes mellitus was a contributory cause of the fatal termination. The blood sugar was within normal limits. It is difficult to surmise just what occurred. Of the several possibilities, sudden heart failure appears to be the most likely one. One cannot, however, overlook the possibility of an embolic manifestation. A rapidly progressing premature detachment of the placenta could likewise simulate the clinical picture described.

The question of determining whether it is advisable to perform a postmortem cesarean section is one that has to be considered by the physician and the family. When events happen as rapidly as in this case the decision is rarely made in time to save the child. It is a very rare occasion that a child has been saved by this method. One certainly cannot be open to criticism for not performing such a debatable procedure. If the patient was in the hospital and the fetus was apparently alive after the death of its mother such a procedure might be attempted. In the home, however, the operation may be difficult or impossible to carry out.

DERMATITIS FROM AUTOMOBILE LACQUERS

To the Editor.—A white man aged 24, whose occupation is body repair work and painting in a garage, has had a dermatitis of the exposed parts of the body, which becomes aggravated when he uses the paints. Which of the materials mentioned in the attached folder would be most likely to cause the dermatitis, and what could be done to prevent it, aside from a change in occupation?

JAMES J. LUTZ, M.D., Phelps, Wis.

ANSWER.—The descriptive folder refers to a type of lacquer designated for trade purposes as Opex lacquers. Basically the ingredients are not different from those in other lacquers designed for the same purposes. In addition to nitrocellulose, this lacquer is likely to contain isopropyl acetate, butyl acetate, ethyl alcohol and benzine, together with natural and synthetic resins and plasticizers. Any individual ingredient might be associated with dermatitis as the cause, but it is possible that the entire solvent mixture is responsible. However, this may be determined by carrying out patch tests, using the individual constituents as well as the lacquer in its entirety. If no specific sensitization is established it is possible that the dermatitis is related to the fat solvent action.

In any case, something may be gained if the workman on cleaning up at the end of a work period will carefully rub into the exposed parts of his skin some bland, oily material of animal or vegetable origin, such as hydrous wool fat, cold cream or cocoa butter. It is possible that this condition may be prevented by applying to exposed parts of the skin protective emollients that are insoluble in the lacquer.

ANTAGONISM OF SODIUM, CALCIUM AND MAGNESIUM

To the Editor.—Is sodium the physiologic antidote for an overdose of calcium intravenously? Is not calcium also an antidote for an overdose of magnesium sulfate intravenously?

M.D., California.

ANSWER.—Sodium and calcium are ionic antagonists in all physiologic relations. In addition the intravenous use of sodium promotes diuresis and therefore speeds up the elimination of the excess calcium. Meltzer demonstrated thirty years ago that, while calcium and magnesium ions have many points in common, calcium promptly revives a subject from the anesthetic effect of magnesium, apparently by a central effect.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, July 23, page 344.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II*. Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination, Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An affiliate of the American Board of Surgery. New York. Oct. 21-22. Applications must be filed sixty days prior to examination. Sec., Dr. Paul M. Wood, 745 Fifth Avenue, New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: St. Louis, Nov. 11-12 if the number of candidates warrants it. Applications of Class B candidates should be filed by Sept. 1 and of Class A by Oct. 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written examination* will be held at various centers of the United States and Canada, Oct. 17. *Final date for filing applications is Sept. 1*. Chairman, Dr. Walter L. Biering, 406 Sixth Ave., Suite 1210, Des Moines, Iowa.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written examination for Group B candidates* will be held in various states of this country and Canada, Nov. 5. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: New York, Oct. 7, and Washington, D. C., Oct. 8. *All applications should be filed immediately and case reports, in duplicate, must be filed not later than sixty days before the date of examination.* Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF OTOLARYNGOLOGY: Washington, D. C., Oct. 7-8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Detroit, October 26; Rochester, N. Y., November 13; and Oklahoma City, November 15. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 28-30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlantic City, N. J., Sept. 15-18. Sec., Dr. Byrl R. Kirklín, 102-110 Second Ave. S.W., Rochester, Minn.

Vermont February Examination

Dr. W. Scott Nay, secretary, Vermont State Board of Medical Registration, reports the written examination held at Burlington, Feb. 8-10, 1938. The examination covered 12 subjects and included 90 questions. An average of 75 per cent was required to pass. Six candidates were examined, five of whom passed and one failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
St. Louis University School of Medicine.....	(1932)		83
Jefferson Medical College of Philadelphia.....	(1931)		90
University of Vermont College of Medicine.....	(1937)	78.1,	85.7, 89.4

School	FAILED	Year Grad.
Kansas City University of Physicians and Surgeons.....	(1937)	

Ten physicians were licensed by endorsement from Jan. 12 through May 20. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
College of Medical Evangelists.....	(1935)	N. B. M. Ex.
Yale University School of Medicine.....	(1908)	New Jersey
Harvard University Medical School.....	(1924)	N. B. M. Ex.
Columbia Univ. College of Physicians and Surgeons.....	(1935)	New York
New York University College of Medicine.....	(1935)	N. B. M. Ex.
University of Vermont College of Medicine.....	(1936)	N. B. M. Ex.
Dalhousie University Faculty of Medicine.....	(1926)	New Jersey
University of Western Ontario Medical School.....	(1925)	Ohio
Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England.....	(1937)	England
Hamburgische Universität Medizinische Fakultät.....	(1937)	New Jersey

Hawaii April Examination

Dr. James A. Morgan, secretary, Board of Medical Examiners, reports the oral and written examination held at Honolulu, April 11-14, 1938. The examination covered 10 subjects and included 80 questions. An average of 75 per cent was required to pass. One candidate was examined and passed. One physician was licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Baylor University College of Medicine.....	(1937)		87.6

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
Northwestern University Medical School.....	(1937)	N. B. M. Ex.

Book Notices

Care During the Recovery Period in Paralytic Poliomyelitis. By Henry O. Kendall and Florence P. Kendall, Children's Hospital School Baltimore. With an Introduction by George E. Bennett, M.D., and Robert W. Johnson Jr., M.D., Johns Hopkins University School of Medicine, Baltimore. Prepared by direction of the Surgeon General. U. S. Treasury Department, Public Health Service. *Public Health Bulletin No. 242.* Paper. Price, 20 cents. Pp. 92, with 61 illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1933.

This booklet offers for the first time the comprehensive plan of treatment carried out at Johns Hopkins University School of Medicine. The work of Mr. and Mrs. Kendall has been well shown in moving pictures but up to the present has not been presented in booklet form. There is a complimentary introduction by Drs. Bennett and Johnson, under whose medical direction the work was undertaken. The booklet does not deal with the epidemiology, prevention or immediate cure, nor does it give late surgical or reconstructive treatment. It presents clearly and in detail the plan of treatment required during the long period of recovery that follows an acute attack of infantile paralysis. There is a brief discussion of the pathologic changes that occur in this disease. The whole principle is to maintain the highest degree of protection of muscles in order to develop muscle power. The principles and technique described are those which have been evolved during a practice of about fifteen years at the Children's Hospital in Baltimore, accurately tested, checked and rechecked on patients in various stages of convalescence. Mr. and Mrs. Kendall deserve high praise for their accurate, painstaking and meticulous work. The subjects discussed are the general outline of care in preparalytic, acute, paralytic, subacute and later stages. Stimulative treatment including heat, massage, exercise, underwater exercises and suction pressure is considered. The second section of the book includes a key to muscle grading and charts for recording muscle power and the general principles that must be followed in order to obtain accurate tests. The third section contains examination of muscles of the extremities, head and upper part of the trunk. The fourth section includes examinations of the abdominal muscles. The fifth section includes muscle actions in the upright position. There are some valuable illustrations with regard to the immediate postural treatment, showing proper bed positions and preliminary splints. The most common deformities are illustrated. The section on abdominal and back muscles is excellent. The illustrations on hand casts are instructive. The uses of back braces, crutches, splints and corsets are well illustrated.

Bec-de-lièvre: Formes cliniques—Chirurgie. Par Victor Veau. Avec la collaboration de Jacques Récamier. Paper. Price, 100 francs. Pp. 326, with 1,214 illustrations. Paris: Masson & Cie, 1933.

This extensive monograph on harelip by the foremost oral surgeon of France, and a surgeon of international repute, is a companion piece to the author's treatise on cleft palate. Whereas in the latter the author, according to his statement, proposed to publicize a new operative procedure, in this book he deals not with a new principle but with a series of technical details which in his hands have improved surgical results. It is divided into two parts: the first and shortest is descriptive of varieties of harelip, the second of surgical treatment of this defect. Harelip deformity is divided into four groups, simple and total unilateral and simple and total bilateral. These, with their variations and subdivisions, are individually considered, and their incidence in the author's and in foreign clinics listed. In the surgical portion, following a consideration of various techniques, the author deals with his own operative methods. The book is based on experience with more than 1,400 harelips; 1,135 were operated on by the author and 300 are cases observed by the author. The latter afford him an excellent opportunity to evaluate varied surgical procedures. He believes that he is perhaps more fully acquainted than the operators with some of their end results. On analysis of certain published methods he thinks that the perspective of some surgeons is somewhat foreshortened, that they do not permit sufficient time to elapse between operation and observation of end results or lose track of their patients and thus are ignorant of the actual outcome

of their intervention. In further substantiation of this impression he itemizes 208 cases of total bilateral harelip, sixty-seven of the patients having died and only sixty-three of the remainder being available for statistics. Current and classic operative procedures are considered critically, the criticism being forceful but sympathetic, the author at all times confessing his own errors and including them among the multiple illustrations which he considers the chief virtue of the volume. He believes that publicized errors are of value to his colleagues. His own operative modifications are graphically illustrated. In fact, the book is replete with illustrations; while some are of questionable value, many are decidedly instructive. The modification of total bilateral harelip is his special concern, in that he considers his method something of an innovation. He is vehement in deploring certain treatments of the premaxilla in this defect. A section is devoted to an analysis of the author's own poor results, which are illustrated. The oral surgeon will find the book something of a technical asset and a kindly literate criticism of classic and current methods of abolishing harelip deformities.

Die Insulinschockbehandlung der Schizophrenie (unter Berücksichtigung des Cardiazolkrampfes): Ein Leitfaden für die Praxis. Von Dr. A. T. Braunnücht, Oberarzt an der Heil- und Pflegeanstalt Egging-Haar. Paper. Price, 7.50 marks. Pp. 71, with 20 illustrations. Berlin: Julius Springer, 1933.

This booklet constitutes a comprehensive statement and critical discussion of the technique, therapeutic indications and contraindications in the employment of the insulin shock therapy of schizophrenia. The author takes into consideration also the question of metrazol in the therapy of schizophrenia and recommends its employment in combination with insulin, either during the rest day in the course of insulin therapy or after a brief period (two hours) of insulinization when an epileptic seizure is desirable. The booklet is an excellent guide to the employment of these therapies in schizophrenia and contains a rather complete bibliography on the subject.

The Practice of Refraction. By Sir Stewart Duke-Elder, M.A., D.Sc., M.D., Surgeon-Oculist to H. M. The King. Third edition. Cloth. Price, \$4.50. Pp. 371, with 183 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1933.

This present revision, following three years after the preceding edition, testifies to the continued popularity of this clinical guide to the art of refraction, an acclaim merited by a text that is lucid, personal, nonmathematical and, with minor exceptions, authoritative. In the new material is a well written description of contact glasses, their advantages and indications, but the actual technique for prescribing these glasses is not discussed. The author appears favorably impressed with the recent work on anisokonia; he ignores the serious adverse criticisms of Friedewald, Ludvig and others but concedes that "it is yet too early to give a dogmatic estimate of its clinical importance." Dynamic retinoscopy comes in for passing notice, but muscular imbalance is awarded detailed consideration. Along with most British authors, he believes the Maddox wing test best adapted for the study of muscle balance at the near point. In cyclophoria he advises against moving the cylinder from its correct axis, for the relief does not compensate for the blurred vision that results. In excessive exophoria, prisms restricted to near use are recommended. Refraction without cycloplegia is considered the more physiologic and is advised in persons past 25 except when otherwise contraindicated. Nevertheless, though the discussion of objective methods of refraction is comprehensive and detailed, including a clear exposition of cylinder retinoscopy, the treatment of subjective refraction is, in comparison, crude and disappointing. In the cursory mention of the cross-cylinder and the astigmatic dial, neither the rationale nor the possibilities of these procedures is adequately developed. The clinical use of the ophthalmometer is depreciated, as the readings are misleading from the practical point of view both for the accommodating and for the aphakic eye. The refractometer of Fincham, however, is considered reliable. Lens design is discussed, but not vertex refraction. With regard to tinted glasses, he holds the view of representative American ophthalmologists and physicists that in ordinary illumination they are quite unnecessary for the healthy eye and that the frequency with which they are employed in temperate climates depends largely on fashion and

erroneous ideas of the action of light on the eye. The book is intended for the tyro, but even the experienced refractionist will probably find that it clarifies many points that have been obscure heretofore.

Les ultravirus des maladies humaines. Par C. Levaditi, P. Lépinc, et al. Cloth. Pp. 1,182, with 264 illustrations. Paris: Librairie Maloine, 1938.

This book reviews the development and present state of knowledge concerning the human diseases that it accepts as caused by ultramicroscopic viruses. It opens with an instructive and comprehensive discussion of ultraviruses by Levaditi followed by a section on their nature by Gratia. Vaccinia, variola and vaccination are discussed by Gastinel, biologic purification of vaccinia virus by Mesrobian, postvaccinia encephalitis and postinfectious encephalitis in general by J. P. Bijl. Nicolaï reviews herpes, Mohlwill zona (herpes zoster), Lépinc rabies and its virus (104 pages), Levaditi epidemic encephalitis and epidemic poliomyelitis, with a chapter on immunity in poliomyelitis by Hornus; Lépinc, typhus fever and similar fevers; Mathis, yellow fever; Blanc, dengue; Vieuchange, psittacosis; the Levaditis, inguinal lymphogranulomatosis (*maladie de Nicolas-Favre*); Kreis, lymphocytic choriomeningitis (Armstrong's disease); Haber, influenza. There is a section on filtration by Lecomte du Nouy, on ultrafiltration and its applications to the study of viruses by I. A. Galloway, on experimental and microscopic technic by Lépinc, and on culture of ultraviruses by Plotz. There are numerous good black and white drawings and a plate of drawings in color illustrating the cellular inclusions or bodies typical of herpes, zona, rabies and yellow fever. There are abundant references to the recent literature on the topics discussed. The book covers thoroughly and authoritatively the experimental, microbiologic and immunologic phases of the human diseases of ultravirus etiology. As one would expect, the clinical diagnosis and the nonspecific treatment of the diseases in question do not receive much consideration. The book will long be a useful source of information in its field. It is printed on somewhat heavily loaded and shining paper, and in view of the weight the binding is weak. There is no index of any kind, only a general table of contents listing the titles of the sections and their main subdivisions. The lack of index seriously reduces the ease of reference to particular items in the text. Besides a good subject index an author index would have been of much help in so new and active a field of investigation as ultravirus disease.

Handbook of Social Hygiene. Edited by W. Bayard Long, M.D., Attending Dermatologist and Director of Dermatology and Syphilis Clinics in St. Luke's Hospital, New York, and Jacob A. Goldberg, M.A., Ph.D., F.A.P.H.A., Secretary, Social Hygiene Committee, New York Tuberculosis and Health Association, and Social Hygiene Council of Greater New York. With a foreword by Edward L. Keys, M.D. Cloth. Price, \$4. Pp. 442, with 62 illustrations. Philadelphia: Lea & Febiger, 1938.

This book of twenty-one chapters by different authors contains a wealth of valuable material. The writer of each chapter is a recognized authority in his field and has presented the essential facts in that field as fully and clearly as space permitted. The present campaign against the venereal diseases is discussed, showing the many ways in which medicine, law, sociology, education and religion can join forces with the practitioner and the health officer in abolishing syphilis. Hospitals in concentrating on their original function of caring for the acutely ill have been slow to realize the valuable part they can play in promoting health. Hospital cooperation in social hygiene still lags. This book points out ways and means by which such cooperation can be brought about in the treatment of the venereal diseases. The functions of the United States Public Health Service and the state and local health departments in the venereal disease campaign are outlined. The statistics with regard to venereal disease in this country are given and contrasted with the much lower figures of England and the Scandinavian countries. The great importance of social service and epidemiologic investigation in combating venereal diseases is shown. The nurse is a vital factor in helping to treat and especially to prevent venereal disease and in affording protection to mothers and babies. The public health nurse in particular has a broad field of usefulness in venereal disease control. Syphilis and gonorrhea are family problems just as surely as they are communicable diseases, and for this reason

they become a part of the problem of the family welfare agencies. They can give invaluable aid in the sex education of the young. The history of the whole social hygiene movement in this country is reviewed. The chapter on the legal aspects of the venereal diseases is a particularly interesting one. It outlines the state laws on the subject and discusses problems in workmen's compensation.

The chapters on the clinical symptomatology and medical treatment of the diseases might have been reserved for a more purely medical treatise. However, the book is so arranged that it is not difficult for the student of social hygiene to select the material most adapted to his needs and he will without doubt feel abundantly repaid for such selection and perusal.

-Lane Medical Lectures: The Mechanism of Heat Loss and Temperature Regulation. By Eugene F. Du Bois, Medical Director, Russell Sage Institute of Pathology, New York. Stanford University Publications, University Series, Medical Sciences Volume III, Number 4. Cloth. Price, \$2.25. Pp. 95, with 41 illustrations. Stanford University, California: Stanford University Press; London: Oxford University Press, 1937.

This series of lectures on heat production and heat loss, with a discussion of physiologic mechanisms involved, constitutes a readable account of the important studies by Du Bois and his collaborators. It is the result of many years of work, which have served to mature the point of view and increase the value of the presentation. One of its main virtues lies in the synthesis of anatomic, biochemical, physiologic and clinical material in a critical manner. It demonstrates better than words the value of the scientific approach to the problems of practical medicine. The book is to be recommended to all students of calorimetry in the laboratory and the clinic.

Les hépatites. Par Maurice Loeper, professeur de Clinique médicale à la Faculté de médecine de Paris. Paper. Price, 60 francs. Pp. 262, with 47 illustrations. Paris: Mosson & Cie, 1937.

Clinical observations and deductions with pathologic confirmation made over a period of years at the Hôpital Saint-Antoine in Paris form the basis for the multiple isolated and complicated types of hepatitis discussed by Maurice Loeper, professor of clinical medicine of the Faculty of Medicine of Paris. The subject matter proceeding from acute catarrhal jaundice through what the author terms malignant icterogenic hepatitis embraces Weil's disease and hemochromatosis. The complications and sequelae of liver diseases are included. In all items the author considers the various theories pertaining to etiology and mechanism of liver damage or its results and is forthright in his allegiance to certain theses. The cirrhotoses are not treated *per se* but largely with respect to their implication as predisposing factors or results of malignant icterogenic hepatitis. As to the latter, its features are comparable with those of acute yellow atrophy and toxic cirrhosis, but toxins and chemicals are repudiated in its immediate etiology, these in many instances being assigned a mere contributory role. A hypothetical virus is regarded as the specific agent in the production of the disease, a virus which the author thinks may be in some manner related to that again hypothetical virus which may be the cause of acute catarrhal jaundice. In proof of the existence of the agent or agents, the seasonal and simultaneous incidence of cases of severe and of benign icterus is invoked. Differential diagnosis is somewhat didactically outlined, and selective therapies are prescribed. Specific references are largely to the French literature. A number of the illustrations are of inferior quality. The book is well written, lucid and not difficult to translate. However, the student certainly will be confused not only by deviations from orthodox terminology but also by the author's rather loosely founded though stimulating concepts regarding etiology.

I quadri radiologici delle invaginazioni del tubo digerente. Dal Dott. Bruno Bonomini. Paper. Price, 30 lire. Pp. 114, with 82 illustrations. Belluno: Casa editrice libreria A. Salvador, 1937.

In the introductory chapter the author outlines the plan to be followed in the subsequent chapters, which include statistics, anatomic and pathologic considerations, and the technic of the examination. In the next six chapters the author discusses the different regions in which invagination of the alimentary tract occurs. It is an exhaustive, thorough and fundamental work enriched with excellent illustrations. It is of value in cases in which a contrast enema is administered and films are taken

of the various phases of the reduction of the incarcerated portion when performed by bloodless manipulation. By this the work gains in clarity and the roentgenologist obtains a better understanding in the interpretation of the films. Otherwise the diagnosis of invagination is difficult. In the acute cases a thorough and complete examination is seldom possible because of the poor condition of the patient. The roentgenologist's experience in these cases is therefore limited. Bonomini has given in a certain measure an analysis of the anatomicopathologic condition which enables one to interpret the roentgenologic appearances in the proper manner. A complete bibliography of the literature pertaining to this subject is added.

Regulationsprüfung des Kreislaufs: Funktionelle Differentialdiagnose von Herz- und Gefäßstörungen. Von Fritz Schellong, Dr. med., n. o. Professor an der Universität Heidelberg. Kreislauf-Bücher. Band 11. Herausgegeben in Verbindung mit der Deutschen Gesellschaft für Kreislauforschung. Paper. Price, 11 marks. Pp. 133, with 92 illustrations. Dresden & Leipzig: Theodor Steinkopff, 1938.

This small monograph, the second of a series on the circulation being brought out by the same house, deals exclusively with certain clinical tests of circulatory fitness. Great stress is placed on the behavior of the pulse rate and arterial tension following measured exercise (step climbing) or changes in posture. Many case examples are illustrated by graphs of these responses to exertion. About ten pages is devoted to discussion of the significance of the QRS electrocardiographic complex. The clinical signs observed in certain groups of disturbances are described and considered in the last section of the book. For example, the circulatory responses in thyrotoxicosis, hypertensive disease, hypotension, angina pectoris, postinfectious asthenia and obesity are described in considerable detail. One is conscious of a tendency to stress the significance of numerically measured reactions to effort rather than the broad clinical impression. This is in sharp contrast to the fundamental teachings of Sir James Mackenzie. Instruments and methods of precision are invaluable but they can never replace sound clinical judgment. The significance of dyspnea and the degree of effort that induces it are almost utterly ignored. The volume is well printed and the illustrations are adequate. The literature cited is entirely European and almost wholly German in origin. The book can be recommended as a specialized monograph on certain clinical tests of circulatory fitness, but there is no effort whatever to compare the value of various procedures. It contains little that is new.

Infants In Health and Sickness. By Robert Elsworth Steen, M.D., F.R.C.P.I., Physician, National Children's Hospital, Dublin. Cloth. Price, \$1.75. Pp. 127, with 4 illustrations. New York & London: Oxford University Press, 1937.

This concise outline of infant feeding and development is simply and clearly written so that it can be easily understood by students, nurses and even the average mother. A number of the diseases of infancy also are discussed. The chapters on the most common pathologic conditions of the neonatal period and later infancy are lacking in detail. Treatment is discussed briefly but adequately. The chapter concerning infant hygiene is prepared particularly for mothers and nurses. The book could hardly be recommended as a textbook for students because of the incompleteness of much of the material.

Protoformotherapy in Treatment and Prevention: Fifteen Years of Research on New Scientific Bases of Therapeutics. By Dr. N. E. Ischlonsky. Extended edition of three successive lectures delivered before the Egyptian Medical Association at the University of Cairo in March, 1936, under the title: "The Internal Secretion of the Embryonic Tissues, Its Biological Significance and Its Importance in Practical Medicine." Cloth, Price, 21s. Pp. 237, with 68 illustrations. London: Henry Kimpton, 1937.

This book constitutes an enlargement of three lectures delivered by the author before the Egyptian Medical Association at the University of Cairo in March 1936 and originally published in the *Journal of the Egyptian Medical Association*. Despite the formidable title and a difficult style, Dr. Ischlonsky's contribution will well repay careful reading by interested clinicians and research workers, especially investigators in endocrinology. Though the author does not give a concise definition of "protoformotherapy," this term is apparently used to represent "stimulation of [the] natural protective capacities of the organism," "multispecific" therapy in contrast to symptomatic therapy.

The treatment of symptoms the author considers to be "medical first aid." The investigations reported here refer especially to the use of extracts of embryonic tissue in the therapy of a variety of conditions, both experimental and clinical. This subject has been almost entirely neglected by other workers. Dr. Ischlonsky's interesting results indicate that this may be a fertile field for research and a promising method of therapy.

Le diagnostic radiologique des tumeurs malignes du pharynx et du larynx: Etude anatomo-topographique et radiographique. Par F. Baclesse, chef de service à la Fondation Curie (Institut du radium de l'Université de Paris). Préface de A. Hautant. Paper. Price, 160 francs. Pp. 269, with 236 illustrations. Paris: Masson & Cie, 1938.

In the preface Hautant calls attention to the importance of radiography applied to laryngology, emphasizing at least two points. For the surgeon the procedure is valuable since it gives him information regarding the degree of operability of the tumor, and for the radiologist in that it permits him to outline the field of irradiation. The author, Baclesse, states that radiography of the larynx and pharynx could be considered the "poor relation" of radiographic diagnosis. He emphasizes, however, that one should not forget that radiography is only a complementary procedure and can never replace the clinical examination or biopsy. In the first part of the monograph the radiographic appearances in the normal pharynx and larynx are described, including the ossification and calcification of the normal larynx. The second part deals with the malignant tumors of the pharynx and hypopharynx, including the radiographic differential diagnosis of the tumors of the hypopharynx. The third and last part is concerned with the malignant tumors of the larynx. The text is brief but clear and very definite. The greater portion of the work consists of the illustrations, most of which are excellent reproductions of roentgenograms. Many of these are accompanied by diagrams showing clearly the site of the lesions in question. The volume is the result of many years of careful study and radiographic experience; it is highly informative, is well presented, and should be of immense interest and value to laryngologists.

Die Akklimatislation: Eine Untersuchung über ihre Bedingungen, ihre Fehlschläge und ihre erfolgreiche Führung. Von Dr. J. Grober, Professor für Innere Medizin, Vorstand des Physikalisch-therapeutischen Institutes der Universität Jena. Paper. Price, 6.50 marks. Pp. 150. Jena: Gustav Fischer, 1936.

This is a verbose discussion of the problem of acclimatization from the point of view of a physical therapist who is apparently unfamiliar with the pertinent medical literature as well as with physiologic, pathologic and meteorologic contributions in the field. As Dr. Grober has the title of professor of medicine at the University of Jena and is head of the institute of physical therapy, one might at least expect evidence of expert knowledge in his own particular field; but even this, on careful examination of the pages, is not in evidence. The book presents nothing of value to American physicians.

Austria-Codex 1936. Von Priv.-Doz. Dr. Otto Zekert. Third edition. Fabrikoid. Pp. 343. Vienna: Aesculap-Verlag für medizinische Zeitschriften Ges. m. b. H., 1936.

This is a handy pocket size book which contains most of the pharmaceutical preparations officially registered in Austria before the Anschluss. The first part deals with a list of items arranged both in therapeutic and in chemical groups and is well prepared. The second part is an enumeration of pharmaceutical specialties, of which quite a few, especially of the glandular preparations, could be well omitted.

Studien ueber den spinalen Block mittels optischer Registrierung und mit besonderer Berücksichtigung der respiratorischen Druckschwankungen. Von Sten G:son Lagergren, med. lic. Aus der Neurologischen Klinik des Königlichen Serafimerlazarets, Stockholm. Paper. Pp. 533, with 62 illustrations. Helsingfors: Mercators Tryckeri, 1937.

Lagergren, working in the clinic of Dr. Nils Antoni at Stockholm, has devised an apparatus for simultaneously measuring and recording the respiratory movements of the thorax and the alterations in pressure of the cerebrospinal fluid in the cisterna magna and in the lumbar sac. The present monograph represents the study of 155 cases in which this apparatus was used. Of this number only seventy-two cases have proved useful for analysis. The monograph undoubtedly represents much

time and effort spent in this study. It is regretted that the material is so verbosely presented. The observations, interpretations and conclusions could with great advantage have been presented in a maximum of fifty pages. Few readers will find or give the time necessary to obtain the small amount of real information present. There are no revolutionary ideas presented.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Charitable Hospitals: Applicability of State Statute Forbidding Injunction in Labor Dispute.—The plaintiff, a charitable membership corporation, operates a charitable hospital in Brooklyn, which is supported mainly by payments from the city of New York for care rendered "free patients" sent by the city and by contributions from other sources. It employs about 100 nurses and sixty-five interns and has a staff of about 500 physicians. One of the defendants, the Hospital Employees' Union of Greater New York, Local 171, demanded that the wages of all hospital employees be increased 25 per cent, that each employee be given a full day off each week, that no employee be required to work more than eight hours a day, and that the hospital recognize the union as the sole bargaining agent for its employees, although less than 10 per cent of the employees were members of the union. When the hospital refused to comply with these demands, the union called a strike and resorted to certain activities, such as disorderly mass picketing, sounding of false fire alarms in the hospital buildings, taking possession of the kitchen and laundry facilities of the hospital, assaulting such hospital employees as refused to join the union, engaging in a sitdown strike and discontinuing the operation of elevators in the hospital. The supreme court of New York, special term, King's County, enjoined the union and certain of its officers from interfering in any manner with the conduct and operation of the hospital, and the defendants appealed to the supreme court, appellate division, second department, New York.

A New York statute (Laws 1935, ch. 477) deprives state courts of jurisdiction to issue injunctions in cases involving or growing out of labor disputes except under stated conditions. It was conceded that this statute would prohibit the trial court from issuing the injunction in this case if a charitable corporation, such as the plaintiff hospital is, comes within its purview. The supreme court, appellate division, however, was of the opinion that, even though the anti-injunction statute does not expressly exempt charitable corporations from its operation, the legislature never intended it to apply to an institution such as the plaintiff hospital. While those involved in a labor dispute, as defined by the statute, need not stand in the relation of employers and employees, they must be engaged in the same "industry, trade, craft or occupation." These words connote and emphasize one common thought, that the parties to the controversy shall be engaged in the same business enterprise of commercial pursuit; one party motivated by the desire for profit, the other by the desire to earn a livelihood. The plaintiff hospital is not thus engaged, nor are its supporters motivated by any selfish or pecuniary consideration. The plaintiff's function primarily, perhaps exclusively, is charitable: to care for the sick and disabled and to relieve their suffering and distress whether they are able or not to pay for the service they receive. Obviously the plaintiff is not engaged in any industry, trade, craft or occupation for profit within the meaning of the statute.

The court was of opinion also that when the plaintiff hospital supplied care to so-called "free patients" sent to it by the city, it was in fact, if not in name, a governmental agency, performing a governmental function which ordinarily belongs to and is usually discharged by the state. The anti-injunction statute, said the court, is clothed in general language and is designed to effect a reform in the procedure relating to the issuance of injunctions in labor disputes. The principle of law that excludes the state and its political subdivisions from a statute prescribing in general terms procedural requirements unless they are

specifically included, the court held, requires a holding that a charitable institution such as is the plaintiff hospital is also excluded.

In accepting, as we must, continued the court, the policy of the statute as declared in the preamble of the statute that it was necessary to effect a reform in the issuance of injunctions "in labor litigations," the legislative purpose could have no relation to charitable corporations and their employees, because no injunction ever was issued in a labor dispute involving a charitable institution. That charitable corporations were not meant to be included within the statute finds support in the history of labor's struggle for shorter hours, increased wages and better working conditions. The conflict, which is almost as old as labor itself, always was between those whose capital was invested in business for profit and those whose efforts contributed to the earning of profits. Therefore it is reasonable to assume, in the absence of express language to the contrary, that in enacting the statute the legislature had in mind industrial and commercial enterprises organized for profit and the labor controversies and litigations incident to their operation, and not nonprofit charitable institutions such as the plaintiff hospital.

The appellate division, accordingly, affirmed the order of the special term granting the injunction.—*Jewish Hospital of Brooklyn v. Doe et al. (N. Y.), 300 N. Y. S. 1111.*

Chiropody: Right to Practice Chiropody Not a Franchise; Injunction to Restrain Corporate Practice.—Two licensed chiropodists and the Chiropodist Society of New Jersey instituted proceedings in the court of chancery of New Jersey to enjoin the defendant corporation from engaging in the practice of chiropody. The individual complainants contended that they and all other licensed chiropodists taken collectively have an exclusive franchise which should be protected against the usurpation of the defendant corporation. But, the court said, a license to practice chiropody is not a franchise. "A franchise is a privilege or immunity which can only exist by special grant of the government of the state, and is incapable of existing without such grant, and which the citizen cannot enjoy without legislative grant. . . . It cannot be held, we think, that the right of any person to practice his or her profession, under a license issued pursuant to a statute enacted by the legislature under the police power of the state, comes within any legal definition of a franchise." *State v. Green*, 112 Ind. 462, 14 N. E. 352. Even if licenses to practice chiropody be considered franchises, the court pointed out, they are not, added together, an exclusive franchise, any more than the charters of all the corporations of the state constitute in sum an exclusive franchise.

Sometimes, the court continued, the unlicensed practice of a profession has been viewed as a public nuisance. Equity, however, will not interfere by injunction except the nuisance causes special and serious injury to a complainant. In the present case, it did not appear to the court that the injury to complainants was serious. Such special injury as they may sustain, furthermore, would not arise from the unlawful features of the defendant's activities. The complainants suffer from the competition of the two or three chiropodists employed by the defendant, but not from the circumstance that the defendant has no license and cannot obtain one. In late years, the unlawful practice of law has been enjoined in a number of cases at the suit of members of the profession. Lawyers are said to enjoy a franchise and this fact has been the basis of such suits. There have been also a few instances of suits for the enforcement of regulatory statutes, instituted by members of the profession or occupation concerned. The practice indicated by these suits has sprung up, the court thought, because enforcement of regulatory statutes is sometimes neglected by public authorities and is apt to be more vigorous if those who have a direct financial stake are permitted to prosecute. But, in the opinion of the court, the practice could not be supported in principle and was contrary to the decisions previously handed down in New Jersey. The court, therefore, denied the motion for an injunction to restrain the defendant corporation from practicing chiropody for the reason that the chiropody practice act, on which the complainants sued, was not enacted for their benefit, but to protect the public against untrained chiropodists.—*Mosig v. Jersey Chiropodists, Inc. (N. J.), 194 A. 248.*

Workmen's Compensation Acts: Silicosis an Occupational Disease, Not an Accidental Injury.—The plaintiff, a workman, in the course of his employment as a grinder in the defendant company's grinding department, operated emery wheels for a period of five years. Later he sued the company at common law, alleging that, because of the company's failure to fulfil its statutory duty of supplying adequate exhaust fans and sufficient ventilation, he had contracted "the occupational disease of silicosis as a result of inhaling . . . a quantity of steel, ascoloy, and carborundum dust." From a verdict in favor of the plaintiff and a judgment denying the defendant's motion for judgment notwithstanding the verdict, the defendant appealed to the Supreme Court of Pennsylvania.

The workmen's compensation act of Pennsylvania provides that it shall apply to industrial accidents within the commonwealth. It defines the terms "injury" and "personal injury" as meaning "only violence to the physical structure of the body, and such disease or infection as naturally results therefrom." The defendant company contended (1) that the plaintiff had sustained an occupational disease, for which no compensation was provided in the workmen's compensation act and (2) that he was barred from bringing an action at common law, because silicosis causes "violence to the physical structure of the body," thus making the plaintiff's condition an "injury" within the meaning of that act for which the act provided no compensation.

The workmen's compensation act, said the Supreme Court, must be interpreted as if to the phrase "violence to the physical structure of the body" there was added the phrase "when said violence was due to an accident"; the act does not apply to all cases in which workmen receive injuries which do "violence to the physical structure of the body." Every disease affecting human beings is pathologically an alteration of the normal, healthy condition of the human body and as such involves some degree of "violence." The word "violence," however, in common usage connotes a vehement application of force and is not ordinarily used to characterize the progress of a disease. Conceding, continued the court, that diseases such as tuberculosis and silicosis may involve "violence" in some degree to the "physical structure of the body," a workman who has contracted a disease in the course of his employment does not come under the workmen's compensation act unless that disease had its origin in an injury by accident, and occupational diseases do not so arise. In the opinion of the court the plaintiff could not have maintained an action under the workmen's compensation act because he had not sustained a compensable accidental injury.

The Supreme Court was unable to agree with the defendant's contention that in Pennsylvania no action lies at common law for an occupational disease. Even though the workmen's compensation act provides no compensation for such a disease, it cannot be said that the employee must assume the risk and cannot resort to his common law remedy to secure damages, provided the disease, whether occupational or otherwise, arose from the employer's negligence. The court concluded that the workman had a common law right of action against his employer for injuries caused by a disease contracted in the course of his employment and due to the negligent conduct of his employer in violation of a statutory duty.

Accordingly, the Supreme Court affirmed the judgment in favor of the plaintiff.—*Billo v. Allegheny Steel Co. (Pa.)*, 195 A. 110.

Insanity: "Incurable Insanity" as a Cause for Divorce.

—A state statute, said the Supreme Court of Indiana, that authorizes the granting of a divorce for "incurable insanity" is not void because it contains no definition of "incurable insanity." The law recognizes the reality of insanity as a mental state or condition, the existence of which is susceptible of being established by evidence, and attaches many legal consequences to the existence of this mental state. The existence of incurable insanity is a fact to be proved by whatever evidence the law recognizes as competent. It is essentially a matter of expert opinion and the law accepts as realities those physical and mental conditions which authoritative medical science has determined to exist. When those who were conceded to know most about the subject believed that witchcraft was a reality, the law

accepted witchcraft as a fact. Since medical science recognizes the existence of the mental condition of incurable insanity and purports to determine its existence in particular cases, the law assumes that it is possible to establish the existence of "incurable insanity" as a fact. Consequently, the words "incurable insanity" have a factual meaning which is definite and tangible enough for legislative or judicial cognizance. The law dreams of the absolute but must be content with the approximate and relative.

The court could, furthermore, see no lack of definiteness in the phrase "duly and regularly committed to and confined in a hospital or asylum for the insane." "Duly and regularly committed," the court said, reasonably can mean only that the afflicted spouse must have been committed under legally recognized procedure; the term "hospital or asylum" must be an institution which under the law is authorized to accept insane persons for care and treatment.—*State v. Brown (Ind.)*, 11 N. E. (2d) 679.

Evidence: Statements by Patient to Physician, When Admissible.—A physician, said the St. Louis court of appeals, Missouri, may testify as to statements made by his patient relating to present, existing conditions or symptoms. He may not testify, however, as to the history of the case, based on a verbal account given to him by the patient during the course of an examination. Accordingly, the court of appeals upheld the lower court's refusal to permit an insurance company to show by an attending physician that the insured had stated at the time of an examination by the physician that roentgenograms taken some six months previously had revealed a duodenal ulcer, because such evidence was hearsay and was therefore inadmissible.—*Chavarics v. National Life & Accident Ins. Co. of Tennessee (Mo.)*, 110 S. W. (2d) 790.

Privileged Communications: Testimony of One of Two Attending Physicians Does Not Constitute Waiver.—A plaintiff, said the Supreme Court of Iowa, who testifies concerning the extent and effect of her injuries and permits one of two physicians who treated her to testify in a like manner, does not waive her right to claim that the communications between her and the other physician are privileged within the meaning of the privileged communications statute of Iowa. Accordingly, the Supreme Court held that the latter physician, in the absence of the plaintiff's consent, was incompetent to testify as a witness for the defendant concerning the plaintiff's injuries.—*Pearson v. Butts (Iowa)*, 276 N. W. 65.

Society Proceedings

COMING MEETINGS

- American Association for the Study of Goiter, Washington, D. C., Sept. 12-14. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, White Sulphur Springs, W. Va., Sept. 22-24. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 19-21. Dr. Daniel B. Moss, 547 W. Jackson Blvd., Chicago, Secretary.
- American Congress of Physical Therapy, Chicago, Sept. 12-15. Dr. Richard Kovacs, 1100 Park Ave., New York, Secretary.
- American Roentgen Ray Society, Atlantic City, N. J., Sept. 20-23. Dr. Carleton B. Peirce, University Hospital, Ann Arbor, Mich., Secretary.
- Colorado State Medical Society, Estes Park, Sept. 7-10. Mr. Harter T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Idaho State Medical Association, Sun Valley, Sept. 6-10. Dr. Harold W. Stone, 105 North Eighth St., Boise, Secretary.
- Michigan State Medical Society, Detroit, Sept. 19-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.
- National Medical Association, Hampton, Va., Aug. 15-19. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
- Nevada State Medical Association, Reno, Sept. 23-24. Dr. Horace J. Brown, 120 N. Virginia St., Reno, Secretary.
- Oregon State Medical Society, Timberline Lodge, Aug. 24-27. Dr. Morris L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
- Society of American Bacteriologists, San Francisco, Aug. 30-Sept. 1. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.
- Utah State Medical Association, Ogden, Sept. 1-3. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Washington State Medical Association, Bellingham, Aug. 29-31. Dr. W. W. Spickard, 1303 Fourth Ave., Seattle, Secretary.
- Wisconsin State Medical Society of Milwaukee, Sept. 13-16. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.
- Wyoming State Medical Society, Laramie, Aug. 7-9. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

33: 167-330 (June) 1938

- Prognostic Significance of Intracellular Mucicarmophilic Material in Carcinoma of the Female Breast. Virginia Kneeland Frantz, New York.—p. 167.
- Tumor of Palm Having Structure of Mixed Tumor of Salivary Glands. L. C. Simard, Montreal.—p. 182.
- Relationship of Malignant Amelanotic Melanoma (Nevocarcinoma) to Extramammary Paget's Disease. A. P. Stout, New York.—p. 196.
- Malignant Tumors in Dogs: Description of Nine Cases. H. B. Rudduck and R. A. Willis, Melbourne, Victoria, Australia.—p. 205.
- Adenocarcinoma in Uterus of a Rat Following Trauma and Extensive Hormone Stimulation. C. R. Halter, New York.—p. 218.
- Comparative Pathology of Cancer of Alimentary Canal, with Report of Cases in Mice: Studies in Incidence and Inheritability of Spontaneous Tumors in Mice: Report XXXIV. H. G. Wells, Maud Slye and Harriet F. Holmes, Chicago.—p. 223.
- Effect of 1:2:5:6-Dibenzanthracene on Growth of Brown-Pearce Rabbit Carcinoma. M. Appel, A. A. Strauss, G. Kolischer and H. Necheles, Chicago.—p. 239.
- Significance of Amino Acids for Growth in Vitro of Human Fibroblasts: II. Growth in Mediums Containing Various Amounts of Glycine. J. P. M. Vogelaar and Eleanor Erlichman, New York.—p. 246.
- Transmission of Animal Tumors by Means of Isolated Cells: I. Transmission to Mice and Rats. N. Krotkina, Leningrad, U. S. S. R.—p. 253.
- Action of X-Rays on Nucleated and Nonnucleated Egg Fragments. P. S. Henshaw, New York.—p. 258.
- Morphology of Stomach and Gastric Secretion in Malays and Chinese and Different Incidence of Gastric Ulcer and Cancer in These Races. C. Bonne, P. H. Hartz, J. V. Klerks, J. H. Posthuma, W. Radsuma and S. Tjokronegoro, Batavia, Java.—p. 265.

American Journal of Clinical Pathology, Baltimore

8: 233-382 (May) 1938

- Clinicopathologic Application of Serum Phosphatase Determinations, with Special Reference to Lesions of Bones. J. H. Roe and E. R. Whitmore, Washington, D. C.—p. 233.
- Osteopetrosis (Marble Bone Disease). F. H. Lamb, Davenport, Iowa, and R. L. Jackson, Iowa City.—p. 255.
- Experimental Study of Biphasic Van den Bergh Reaction. N. Heilbrun and R. Hubbard, Buffalo.—p. 273.
- Bilateral Cortical Necrosis of the Kidneys. I. A. Gáspár, Rochester, N. Y.—p. 281.
- Glomeruloma of the Kidney: Report of Case and Review of Literature. C. I. Owen, Detroit.—p. 302.
- Endometrial Histology in Relation to Ovarian Function. W. E. Herrell, Rochester, Minn.—p. 315.
- *Rat-Bite Fever (Sodoku): Report of Five Cases. R. S. Leadingham, Atlanta, Ga.—p. 333.
- Pathology of Lungs and Other Organs in Silicosis. P. B. Matz, Washington, D. C.—p. 345.
- Significance of Mucus in Carcinoma of the Prostate Gland. F. Pilcher Jr., Rochester, Minn.—p. 366.

Rat-Bite Fever.—Leadingham cites five cases of rat-bite fever (sodoku) with the characteristics of the *Rattus norvegicus* following bites by rats. Two patients were bitten on their fingers, one on the wrist, one on the nose and one on the ear and neck. In all cases the wounds healed promptly. Incubation periods varied from four to thirty-six days. "Primary lesions," induration of original wounds, occurred in three instances with the onset of chills and fever. Lymphadenitis was present in four cases. Cutaneous eruptions occurred in three cases. Leukocytosis varied from 8,400 to 19,100, with neutrophils from 52 to 80 per cent. All patients complained of aching pains in their muscles and joints. The clinical course of the illness was characterized, in each instance, by recurring paroxysms of chills and fever at intervals of five days. In two cases the hyperthermic episodes observed in the hospital showed a septic type of fever lasting from forty-eight to ninety-six hours, falling in one instance by crisis and in the

other by lysis. Three patients were each given one injection of arsphenamine or nearsphenamine; one patient had two and one had seven injections. * The characteristic clinical course of an illness following a bite by a wild rat or other susceptible animal should warrant the diagnosis of rat-bite fever and the use of arsenicals before organisms are isolated by animal inoculation. Prompt alleviation of symptoms should follow their administration if the illness is caused by *Spirillum minus*.

American J. Digestive Diseases, Huntington, Ind.

5: 217-280 (June) 1938

- Process of Intestinal Rotation in the Human Being Illustrated by Dried Intestines of the Cat. E. G. Wakefield, C. S. Welch and C. W. Mayo, Rochester, Minn.—p. 217.
- Gastroscopic Studies. F. A. J. Geier, Washington, D. C.—p. 218.
- *Simple Test for Determining the Presence of Gastrointestinal Lesions: Preliminary Report. E. E. Woldman, Cleveland.—p. 221.
- Effects of Acetylcholine, Acetyl-Beta-Methylcholine and Prostigmine on Secretion of Stomach of Man and Dog. H. Necheles, W. G. Motel, J. Kosse and F. Neuwelt, Chicago.—p. 224.
- The Takata Reaction in Blood Serum. E. Wayburn and C. B. Cherry, San Francisco.—p. 231.
- Chronic Ulcerative Colitis: Analysis of Eighty-Eight Cases. I. A. Feder, Brooklyn.—p. 239.
- Vitamin B Complex and Functional Chronic Gastrointestinal Malfunction: Study of 227 Cases. H. Borsook, Pasadena, Calif., P. Dougherty, A. A. Gould, Los Angeles, and E. D. Kreners, Pasadena, Calif.—p. 246.
- Vitamin C Content of Certified Milk at the Time of Consumption. F. V. West and J. C. Wenger, Los Angeles.—p. 251.
- Cyst of Gastrocolic Omentum. D. B. Fishback, Philadelphia.—p. 252.
- Early Diagnosis of Nontropical Sprue, with Note on Its Familial Incidence. G. L. Weller Jr., Washington, D. C.—p. 254.
- Chronic Duodenal Ulcer: Unusual Case. W. F. Cheney, San Francisco.—p. 257.
- Ulcerative Colitis with Unusual Complications: Case. H. N. Taube, Toronto.—p. 259.

Test for Determining Gastrointestinal Lesions.—Woldman describes a test for determining the presence of a break in the continuity of the mucous membrane of the gastrointestinal tract by the administration of 0.1 Gm. of phenolphthalein in an alcoholic solution. For this test, 1 Gm. of white phenolphthalein is dissolved in 100 cc. of 95 per cent alcohol. The oral dose administered is 10 cc. of this solution, or 0.1 Gm. of phenolphthalein. The solution should be administered in the morning, when the patient is in a fasting state. The patient is instructed not to eat or drink for one hour after taking the phenolphthalein. Specimens of urine are obtained two and four hours after the patient has taken the phenolphthalein solution. A portion of each specimen of urine is poured into two containers, one to be used for comparison of color with the other portion, to which 10 per cent sodium hydroxide solution is added. The 10 per cent solution of sodium hydroxide is added with a dropper until no more change in color (pink) takes place. The urine must be examined promptly, for otherwise false positives may be obtained. If the test is positive for free phenolphthalein, a break in the mucous membrane of the gastrointestinal tract caused by ulcer or carcinoma is indicated. If the test is negative, it indicates that the mucous membrane is intact. The test has been performed on 112 subjects. Seventy-seven of the subjects had no apparent gastrointestinal lesion and thirty-five had gastrointestinal lesions demonstrated roentgenologically or by other means. Of the thirty-five patients with lesions, all but one showed a positive test for phenolphthalein in the urine. In the exceptional instance there was x-ray evidence of an irregular duodenal cap, and the patient had pain one-half hour after meals which was relieved by food but not by alkalis. Since this is atypical for duodenal ulcer, the patient may not have had an active lesion. Of the seventy-seven cases with no apparent gastrointestinal lesion, seventy-five exhibited no evidence of phenolphthalein in the urine after two and four hours. The two patients in this control group in whom tests for free phenolphthalein in the urine were positive were too ill to check thoroughly for the presence or absence of a gastrointestinal lesion. One had advanced multiple sclerosis and the other coronary thrombosis. The latter died a few days after the test was made, but postmortem examination was refused. It is possible that these patients may have had some lesion in the stomach or intestine which was not suspected or was masked because of the other disease, but this has not been proved.

American J. Obstetrics and Gynecology, St. Louis

35: 925-1114 (June) 1938. Partial Index

- *Disgerminoma of the Ovary: Clinical and Pathologic Study of Seventeen Cases. E. Novak and L. A. Gray, Baltimore.—p. 925.
 Clinical Evaluation of Stereoroentgenography of the Female Pelvis. K. B. Steele, L. A. Wing and C. M. McLane, New York.—p. 938.
 Blood Chemistry Observations in Protein Deficient and Toxic Pregnancies. M. H. Barker, Chicago.—p. 949.
 Masculinizing Elements in the Ovary. R. A. Reis and O. Saphir, Chicago.—p. 954.
 Familial Intersexuality: Report of Three Unusual Cases. D. R. Mishell, Newark, N. J.—p. 960.
 Determination of Estrogenic Substance in Blood Serum by Means of Estimation of Antiproteolytic Power of Serum. E. Shute, London, Ont., Canada.—p. 970.
 Origin of Substance in Urine Which Produces Elongation of Bitterling Ovipositor. A. E. Kanter, A. H. Klawans and B. O. Barnes, Chicago.—p. 984.
 *Significance of Clostridium Welchii in Genital Tract of Pregnant and Puerperal Women. S. M. Bysshe, New York.—p. 995.
 Observations on Relative Efficiency of Two Types of Ergot Preparations in Control of Postpartum Bleeding. R. C. ter Kuile, Bridgeport, Conn.—p. 999.
 *Trichomonas Vaginalis Vaginitis: Comparative Study of Treatment and Incidence. P. Peterson, San Diego, Calif.—p. 1004.
 Serologic Study of Hemolytic Streptococci from Throat, Nose and Vagina of Antepartum Obstetric Patients. F. O. Rolfs, R. E. Trussell and E. D. Plass, Iowa City.—p. 1009.
 Results of Treatment in Antepartum Syphilis Clinic at Bellevue Hospital. M. D. Speiser, New York.—p. 1013.
 Etiology of Cervicitis: Preliminary Report. M. A. Roblee, St. Louis.—p. 1039.
 Pregnancy Complicated by Gonococcal Salpingitis. W. M. Brunet and J. B. Salberg, Chicago.—p. 1056.
 Twin Ectopic Pregnancy. H. C. Falk and G. Blinick, New York.—p. 1058.

Disgerminoma of the Ovary.—Ovarian disgerminoma, according to Novak and Gray, is considerably less frequent than granulosa cell carcinoma but more common than arrhenoblastoma or Brenner tumors. They have encountered seventeen disgerminomas, as against fifty-eight granulosa cell carcinomas, seven arrhenoblastomas and eight Brenner tumors. Disgerminoma is preeminently a tumor of early life. It is common in children before puberty and likewise in young adolescents. It is sometimes found in adult women. The authors' youngest patient was 6 and the oldest 38 years of age. The average age was 20. Since these tumors arise from cells dating back to the undifferentiated phase of gonadal development, it is not surprising that an exactly similar tumor, the well known seminoma, occurs in the testis. Disgerminoma exhibits no endocrine activity but is made up of sexually indifferent cells. In this respect it differs from the feminizing granulosa cell carcinoma and the masculinizing arrhenoblastoma. Disgerminoma is often observed in sexually underdeveloped or pseudohermaphroditic individuals, but it has nothing to do with the production of these abnormalities of sex, which persist after removal of the tumor. The malignant degree of the tumors varies with the individual tumor. The outlook is favorable when the tumor is unilateral, with intact capsule. Nine of ten such patients have remained well after operation. The results of operation are much less favorable when the capsule has been broken through, with extensive infiltration of surrounding organs and perhaps metastases. Even when there is considerable infiltration, with incomplete removal, some patients have been apparently cured by postoperative irradiation, which the authors believe is a valuable adjunct in such cases.

Clostridium Welchii in Genital Tract.—Bysshe took anaerobic vaginal cultures on 547 patients and positive Clostridium welchii cultures were obtained in twenty-five, or approximately 4.5 per cent. The five patients who had positive cultures in the antepartum clinic showed no evidence of infection or morbidity in the puerperium. Of the nineteen patients from whom positive cultures were obtained during the puerperium, only eight showed morbidity, i. e. a fever of 100.4 F. or more. Five of these had evidence of endometritis and the Welch bacillus was cultured from the genital tract. Of these five only one, the patient who died, presented the typical picture of gas bacillus sepsis. The remaining four showed symptoms and signs of ordinary puerperal endometritis.

Trichomonas Vaginalis Vaginitis.—Peterson found the incidence of Trichomonas vaginalis infection among 5,712 obstetric and gynecologic patients of the Obstetrical and Gynecological

Clinic at the U. S. Naval Hospital, San Diego, Calif., to be 24.6 per cent for all patients examined or 3.69 per cent when only those with typical symptoms were considered. In postpartum cases the incidence was 33 per cent, as compared to 20.3 per cent in the antepartum cases. Trichomonas vaginalis vaginitis as a recognized clinical entity occurred in only 15 per cent of the cases. Some patients had pain in the region of the left lower quadrant and painful coitus with no other changes to account for it. When the three methods of treatment employed (carbarsone, vioform and silver picrate) are compared the results appear to parallel one another, though there appears to be a slight advantage from the use of silver picrate.

American Journal of Public Health, New York

28: 695-806 (June) 1938

- Problems of a Housing Enforcement Program. L. M. Graves and A. H. Fletcher, Memphis, Tenn.—p. 695.
 Epidemiology of Trichinosis. C. D. Barrett and R. Sears, Lansing, Mich.—p. 706.
 Nutrition Program in a State Health Department. W. E. Morris, Dover, Del.—p. 718.
 Tabular Outline for Use in Reporting Hospital Morbidity. J. Berkson, Rochester, Minn.—p. 723.
 Acute Diarrheal Disorders. A. V. Hardy and J. Watt, New York.—p. 730.
 A Water-Borne Outbreak of Gastroenteritis in a Tennessee Town. C. Pharris, F. W. Kittrell and W. C. Williams, Nashville, Tenn.—p. 736.
 Gastrointestinal Disorder Not Proved to Be Water Borne. D. G. Gill and J. G. McAlpine, Montgomery, Ala.—p. 741.
 *Pathologic and Immunologic Studies in Poliomyelitis and Their Significance in Therapy and Treatment. M. Brodie, Detroit.—p. 746.
 Rural Syphilis: A Localized Outbreak. R. C. Kimbrough, D. M. Cowgill and E. P. Bowerman, Madisonville, Tenn.—p. 756.
 Lactobacillus Acidophilus and Dental Caries. P. Jay.—p. 759.
 Survival of Eberthella Typhi in Sewage Treatment Plant Processes. C. E. Green and P. J. Beard, Stanford University, Calif.—p. 762.

Pathologic and Immunologic Studies in Poliomyelitis.—Brodie declares that the virus of poliomyelitis in the experimental animal is strictly neurotropic and travels by way of the nerve tracts. Neither the port of entry nor the pathogenesis has been finally determined in man. The study of immunologic data show that: 1. The presence of serum neutralizing substances or the so-called antibodies and resistance to the disease do not necessarily correlate. However, in the human being there is evidence that the presence of antibodies may be indicative of immunity. 2. Recovery from poliomyelitis does not, as a rule, result in demonstrable antibodies or neutralizing substances. 3. The so-called neutralizing substance can develop only as a result of specific exposure to the virus. 4. There is evidence that more than one strain of virus exists. Neither convalescent serum nor any of the other available therapeutic measures advocated offers any hope for the prevention or limitation of paralysis in treated cases. The value of active immunity as a preventive is undetermined. Further studies should be withheld until the human pathogenesis has been worked out. Nasal sprays are effective in protecting the monkey. In the human being the results are not encouraging and may not be protective.

American Journal of Tropical Medicine, Baltimore

18: 245-330 (May) 1938

- *Effectiveness of Carbarsone as a Remedy for Amebiasis. E. G. Hakanson, Panama, Republic of Panama.—p. 245.
 Seventh Year's Observations on Malaria in Panama. H. C. Clark and W. H. W. Komp, Panama, Republic of Panama.—p. 271.
 Role of Some Common Anopheline Mosquitoes of Panama in the Transmission of Malaria. L. E. Rozeboom, Panama, Republic of Panama.—p. 289.
 Studies on Sparganium Mansonoides and Sparganium Proliferum. J. F. Mueller, Syracuse, N. Y.—p. 303.
 Further Observation on Incidence of Hepaticol (Capillaria) Hepatica in Human Feces. H. E. Wright, Dallas, Texas.—p. 329.

Carbarsone for Amebiasis.—In the early part of 1935 Hakanson began to treat some cases of amebiasis with carbarsone. Only oral administration of the drug was employed. A total of only forty-five cases were treated under controlled conditions; thirty-five of these were inmates of Retiro Matias and Hernandez, the remaining ten being laboratory technicians and members of their families living in Panama City. The carbarsone was given in divided doses two or three times a day immediately after meals. During the treatment and for a month

thereafter the patients were observed for toxic effects, such as gastrointestinal irritation, dermatitis, jaundice, albuminuria and impairment of vision. A small daily dose of 0.0075 Gm. per kilogram of body weight (approximately 0.25 Gm., one capsule, twice daily) given for ten days will cure some carriers. In other carriers this dose will fail to cure even though continued over a period of four weeks. Even a large daily dose of 0.025 Gm. per kilogram of body weight (1.75 Gm., seven capsules) given for ten days may fail to cure some carriers. In the presence of acute amebic dysentery the small daily dose of 0.0075 Gm. per kilogram may not only fail to cure but may even be insufficient to clear the stools of *Endamoeba histolytica* and to control the dysentery. The large dose of 0.025 Gm. per kilogram promptly relieves the dysentery and brings about a clinical cure and in some cases eradication of the infection and actual cure. The immediate effects on the amebas in the stools and the clinical results indicate definitely a greater effectiveness of large doses for ten days than small doses for four or five weeks.

Archives of Dermatology and Syphilology, Chicago

37: 937-1096 (June) 1938

Significance in Dermatology of Virus Diseases and Their Organisms. E. Hoffmann, Bonn, Germany.—p. 937.

New Species of *Madurella*: Isolation and Identification in Case of *Maduromycosis*. E. B. Hanan and Sophia Zurett, Buffalo.—p. 947.

LXXVIII. *Trichomycosis Axillaris Rubra*: Report of Case with Description of Condition. M. Moore, St. Louis.—p. 967.

Tinea Versicolor Involving the Scalp. R. L. Baer, New York.—p. 970.

Multiple Idiopathic Hemorrhagic Sarcoma of Kaposi: Report of Fourth Case in Full-Blooded Negro. L. J. A. Loewenthal, Uganda, British East Africa.—p. 972.

*Incidence in the Chicago Region of Acne Vulgaris. Josephine Hinrichsen and A. C. Ivy, Chicago.—p. 975.

Diffuse Polymorphous Neurofibromatosis, with Unusual Localization and Involvement of Central Nervous System. A. Gordon, Philadelphia.—p. 983.

Unusual Reticular Fibro-Atrophyderma Following Arspenamine Dermatitis: Report of Case. E. Epstein, Oakland, Calif.—p. 987.

Dermatology with Syphilology. L. Goldman, Cincinnati.—p. 990.

Clinical Excretion of Bismuth: V. Excretion of Sobisminol and of Some Other Bismuth Preparations for Oral Administration. T. Sollmann, H. Cole and Katharine Henderson, with collaboration of G. W. Binkley, H. Connors, G. Cooper, W. F. Schwartz, M. Sullivan and W. R. Love, Cleveland.—p. 993.

Bismuth in Cerebrospinal Fluid After Administration of Iodobismutol. P. J. Hanzlik, San Francisco.—p. 1003.

Alopecia Areata: Roentgen Studies of Sella Turcica. A. Strickler and S. I. Greenberg, Philadelphia.—p. 1008.

*Vitamin C Deficiency as Cause of Urticaria. W. A. Rosenberg, Chicago.—p. 1010.

Cutaneous Tumors in Leukemia and Lymphoma. Olive Gates, Boston.—p. 1015.

"Erythema of the Ninth Day": Complicated by Acute Hepatitis and Jaundice on Continuation of Arspenamine Therapy. S. S. Robinson, Los Angeles.—p. 1031.

Psychogenic Aspects of Certain Common Cutaneous Diseases. H. H. Hopkins, Baltimore.—p. 1035.

Antonio Nuñez Ribeiro Sanchez (1699-1783): An Eighteenth Century Syphilologist. S. J. Zakon, Chicago.—p. 1040.

Acne Vulgaris.—Hinrichsen and Ivy attempted to determine the incidence of acne vulgaris in Chicago by examining 323 boys and 267 girls living in a children's home and varying in age from 5 to 18 years, 549 boys and 579 girls going to high school and 334 young women attending a university, varying in age from 16 to 22 years. The survey shows that acne vulgaris may occur at a relatively early age. The earliest onset observed in any case was at 6 years in female and 7 years in male subjects. Acne in its broadest sense was present to the same extent in male and female subjects, the university group being excluded. Acne in its narrowest sense (grades ++ and ++++) was present at the children's home in approximately the same proportion of boys (43 per cent) and girls (49.4 per cent), but in the high school group acne in its narrowest sense was more frequent in boys (43.8 per cent) than in girls (22.5 per cent). In girls severe acne was seen first at 11 years and was most severe at from 14 to 16 years. In boys severe acne was seen first at 14 years and was most severe between 16 and 19 years. Since puberty occurs earlier in girls, if sexual maturation is etiologically concerned in acne, as it apparently is, acne should occur earlier in girls. Acne has its definite onset in girls from one to three years before or after the onset of the menses, according to the histories obtained. An exacerbation of acne before or during the menstrual period was observed in 46 per

cent of girls at the children's home and 72 per cent of a group of patients treated at the Northwestern University Clinic. A history of acne in one or more members of the family was given by 75 per cent of the girls at the children's home and by 57 per cent of the boys. The incidence of acne, particularly in the more severe forms, was slightly higher in Negro boys than in white boys. However, the number of cases studied is relatively small. The incidence in female Negroes was about the same as that in the white girls in the same group. The incidence of acne in the Chicago region as compared with that of Bloch in Switzerland indicates that for white subjects the incidence is higher in this region than in Switzerland.

Vitamin C Deficiency in Urticaria.—Since urticaria is a disease involving the blood vessels and the connective tissues of the body and since vitamin C deficiency produces characteristic pathologic changes in these organs, Rosenberg investigated the vitamin C content of the blood in seven cases of urticaria. The daily ingestion of from one to two lemons and oranges by the seven patients raised the vitamin C content of their blood and the urticarial lesions did not recur after a few weeks of a diet including citrus fruit and fresh vegetables.

Archives of Surgery, Chicago

36: 899-1074 (June) 1938

Tumors of the Spine, with Consideration of Ewing's Sarcoma. R. R. Rix and C. F. Geschickter, Baltimore.—p. 899.

Rib Regeneration from Standpoint of Thoracic Surgery. W. F. Bowers, Minneapolis.—p. 949.

*Appendicitis at the Jameson Memorial Hospital. W. E. Flannery, New Castle, Pa.—p. 977.

Modified Double Enterostomy (Mikulicz) in Radical Surgical Treatment of Intussusception in Children. B. Woodhall, Durham, N. C.—p. 989.

*Total Bile Acid-Cholesterol Ratio in Human and in Canine Bile. H. Doubilet and R. Colp, New York.—p. 998.

Review of Urologic Surgery. A. J. Scholl, Los Angeles; F. Hinman, San Francisco; A. von Lichtenberg, Budapest, Hungary; A. B. Hepler, Seattle; R. Gutierrez, New York; G. J. Thompson and J. T. Priestley, Rochester, Minn.; E. Wildholz, Berne, Switzerland, and V. J. O'Connor, Chicago.—p. 1019.

Appendicitis at the Jameson Memorial Hospital.—Flannery studied the records of the 440 patients discharged from the Jameson Memorial Hospital in 1935 and 1936 with a final diagnosis of appendicitis. Twenty-three patients were not operated on. Twenty girls and women were submitted to operation for gynecologic diseases and the appendixes were removed incidentally and in one adolescent male an appendix was not found. This leaves 396 cases of appendicitis in which operation was performed. The records show that 69.4 per cent of the patients were between 11 and 30 years of age. There were 60.2 per cent women and girls and 39.8 per cent men and boys in the group. The average time that elapsed from the onset of the acute attacks until hospitalization was 34.8 hours. Of the 396 patients submitted to operation, 55 per cent stated that they had had previous attacks of appendicitis. In 29.1 per cent of the 189 cases of acute appendicitis in the series the appendix was gangrenous on admission and in 63 per cent of these it had perforated. This shows that too many persons are temporizing in the face of a fatal issue by neglecting first attacks. A total of sixty-nine patients took cathartics, while an additional four were given enemas before admission. Of the nine patients who died, six had taken some cathartic by mouth. Fifteen of some thirty-three patients with ruptured appendixes had had cathartics by mouth before admission and one had an enema. The mortality for the patients who were operated on was a small fraction over two of every hundred. The mortality for patients with acute gangrenous appendicitis with rupture was a fraction over two of every ten. Death occurred in nearly five of every ten patients with spreading peritonitis. More attention should be given to the management of patients with diffuse peritonitis. For example, operation might be deferred, as suggested by Arnheim and others.

Bile Acid-Cholesterol Ratio.—Doubilet and Colp made a series of bile acid and cholesterol analyses of specimens of bile from the gallbladder and from common duct fistulas in order to ascertain the fundamental factors determining the solubility of cholesterol in bile. The amount of cholic acid, of desoxycholic acid and of total bile acids as well as the content of conjugated bile acids and of free bile acids was determined in each sample of bile. The concentration of cholesterol was not significantly

influenced by increasing the concentration of acids in the bile as a result of their administration. Consequently the total bile acid-cholesterol ratio tended to be definitely increased each time bile salts were administered. Only a trace of cholesterol was present in the bile after the administration of dehydrocholic acid. This result may have been due to the fact that cholesterol is insoluble in dehydrocholic acid.

Connecticut State Medical Society Journal, Hartford

2: 257-308 (June) 1938

- Comments on Coronary Artery Disease, with Especial Reference to Prognosis. L. H. Nahum, New Haven.—p. 257.
Diagnosis of Congenital Syphilis. J. H. Root, Waterbury.—p. 265.
Treatment of Neurosyphilis. S. H. Epstein, Boston.—p. 266.
Diabetes Mellitus. T. P. Murdock, Meriden.—p. 272.
Conservative Steps in Treatment of Petrositis. J. R. Page, New York.—p. 275.
The Country Doctor in Turkey. D. M. Rogers, Talas, Kayseri, Turkey.—p. 277.

Illinois Medical Journal, Chicago

73: 449-540 (June) 1938

- Inter Responsibilities of the Medical Profession, Society, Industry and Government. R. K. Packard, Chicago.—p. 465.
The Cause of Cancer. F. E. Simpson, Chicago.—p. 468.
Use of Pitressin in Common Duct Obstruction of Gallbladder by Biliary Calculi: Case Report, Showing Results of X-Ray Studies in Which No Dye Was Used. N. H. Chestnut, Springfield.—p. 475.
Tuberculosis Survey of the Peoria State Hospital: Preliminary Report. M. Pollak, I. Turow and M. Kurth, Peoria.—p. 481.
*Synthetic Male Hormone in Treatment of Prostatic Hypertrophy. F. S. Cary, Chicago.—p. 486.
Congenital Atresia of Upper Vagina with Retained Menses. J. B. Gillespie and H. L. Davison, Urbana.—p. 491.
Wills and Trusts. F. F. Selfridge, Chicago.—p. 494.
Local Treatment of Arthritis by Inunction: New Method of Applying Histamine. D. L. Stormont, Evanston.—p. 501.
Cardiac Review of 1937. N. Flaxman, Chicago.—p. 504.
The Symptoms, Diagnosis and Treatment of Undulant Fever. J. G. Carr, Chicago.—p. 521.
Importance of Electrocardiogram. E. Keating, Chicago.—p. 527.
The Camel and the Doctor. L. C. Ives, Peoria.—p. 530.

Male Hormone in Prostatic Hypertrophy.—Cary is of the opinion that prostatic hypertrophy can no longer be regarded as an independent entity. The interrelationship between the testes, the anterior pituitary gland and the secondary sex organs are recognized and it is known that changes in one of these organs are inevitably conveyed to the other members. If this is true, it is possible that benign prostatic hypertrophy may be due to an endocrine imbalance. Testosterone propionate has been used in the treatment of twenty-six cases of prostatitis or prostatic hypertrophy. Only six patients failed to get any appreciable results. Testosterone propionate has been used in doses of 5 mg. and in every case the general tone of the patient was improved.

Iowa State Medical Society Journal, Des Moines

28: 217-260 (June) 1938

- Advances in Internal Medicine in 1937. J. S. McQuiston, Cedar Rapids.—p. 224.
Pitfalls in Treatment of Varicose Veins. F. L. Smith, Rochester, Minn.—p. 229.
Finding Syphilis Through the Laboratory. M. E. Barnes and M. Pearl Spanswick, Iowa City.—p. 231.
Japanese Persimmon Bezoars: Report of Case. J. C. Hancock, Dubuque.—p. 234.
*Oil of Wintergreen Poisoning. T. E. Kane, Sioux City.—p. 238.

Oil of Wintergreen Poisoning.—Since oil of wintergreen is extremely poisonous and constitutes a particular hazard in the home with children (because of its pleasant odor), Kane recommends that all oil of wintergreen dispensed be labeled "poison" and the purchaser warned of its danger. When poisoning occurs, treatment consists of immediate and thorough lavage. Small amounts of solutions of sodium bicarbonate or magnesium sulfate may be left in the stomach. If collapse occurs, supportive measures are instituted. If the heart weakens, judicious amounts of epinephrine result in at least temporary improvement. Convulsions may be controlled with chloral hydrate if necessary. After early treatment, the prognosis should be guarded and the full gravity of the situation realized. The urine should be watched for the appearance of albumin or acetone and sugar. Intravenous fluids may be given. Two cases of oil of wintergreen poisoning are reported; one of these terminated in death.

Journal of Biological Chemistry, Baltimore

124: 1-358 (June) 1938. Partial Index

- Protein Content of Organs and Tissues of Body After Administration of Thyroxine and Dinitrophenol and After Thyroidectomy. T. Adli, D. Karnofsky, W. Lew and L. J. Poo, San Francisco.—p. 33.
Rate of Citric Acid Formation Following Injection of Sodium Salts of Certain Dicarboxylic Acids. A. H. Smith and J. M. Orten, New Haven, Conn.—p. 43.
Cause of Elevation of Serum Phosphatase in Jaundice. S. Freeman, Y. P. Chen and A. C. Ivy, Chicago.—p. 79.
Protein Fractions of Human Strain H37 of Tubercle Bacillus: II. A. E. O. Menzel and M. Heidelberg, New York.—p. 89.
Reaction of Epiphyseal Cartilage in Normal and Rachitic Rats. J. A. Pierce, Baltimore.—p. 115.
Fate of Plant Sterols in Intestinal Tract. F. L. Bretsch, Szeged, Hungary.—p. 151.
Inhibition of Benzidine Blood Test by Ascorbic Acid. R. Kohn and R. M. Watrous, North Chicago, Ill.—p. 163.
Inhibitory Effect of Low Oxygen Tension on Deamination of Amino Acids in the Kidney. W. Kempner, Durham, N. C.—p. 229.
Influence of Temperature on Vitamin C Content of Dog Adrenals After Death. G. A. Peters and H. E. Martin, Indianapolis.—p. 249.
Study of Fetal Iron. Vivian Job and W. W. Swanson, Chicago.—p. 263.
Quantitative Studies of Effectiveness of Ultraviolet Radiation of Various Wavelengths in Rickets. A. Knudson and F. Benford.—p. 287.
Inactivity of Nicotinic Acid in Chick Dermatitis. O. Mickelsen, H. A. Waisman and C. A. Elvehjem, Madison, Wis.—p. 313.
Fat Metabolism in Dog Following Liver Injury Produced by Carbon Tetrachloride. I. C. Winter, Dallas, Texas.—p. 339.

Journal of Thoracic Surgery, St. Louis

7: 463-574 (June) 1938

- Treatment of Acute Suppurative Pleuritis Following Rupture of Lung Abscess. F. S. Dolley and J. C. Jones, Los Angeles.—p. 463.
*Primary Carcinoma of Trachea. O. S. Culp, Montreal.—p. 471.
Bronchial Obstruction Produced by Organic and Inorganic Foreign Bodies. J. Weinberg, Omaha.—p. 488.
Unexpected Cavity Closure Following Reexpansion of Lung After an Ineffectual Pneumothorax. J. D. Steele Jr., Milwaukee; J. W. Trenis, Ann Arbor, Mich., and E. W. Laboe, Howell, Mich.—p. 498.
Our Experiences in the Employment of Spinal Anesthesia for Thoracoplasty. F. B. Gurd, A. M. Vineberg and W. Bourne, Montreal.—p. 506.
Dry and Wet Stages of Obstructive Atelectasis. J. Kanitz, New York.—p. 512.
*Sterilization of Air in Operating Room with Bactericidal Radiation: Comparative Analysis of 132 Individual Stages of Extrapleural Thoracoplasties Performed with Radiation and 110 Stages Performed Without Radiation. D. Hart, Durham, N. C.—p. 525.
Silver Lineation on Surface of Pulmonic Alveolar Walls of Mature Cat, Produced by Applying Weak Silver Nitrate Solution and Exposing to Sunrays or Photographic Developer. C. C. Macklin, London, Ont.—p. 536.
Extrapleural Lobectomy. J. Sebestyén, Budapest, Hungary.—p. 552.

Primary Carcinoma of Trachea.—Of the total 433 primary tumors of the trachea on record according to Culp at the end of June 1936, 147 (34 per cent) are primary carcinomas. Although primary carcinoma appears to be the most frequent type of malignant tumor of the trachea, the results of thousands of necropsies from various hospitals indicate that it is of relatively rare occurrence. The clinical picture is not characteristic. The commonest early symptom was a tickling sensation in the trachea, followed by an irritating cough and persistent hoarseness (due to pressure on the recurrent laryngeal nerve). In some instances this entire phase was lacking and the earliest symptom was dyspnea or hemoptysis. Regardless of the treatment, the prognosis for carcinoma of the trachea is poor. The only real hopes for cure are the early lesions in the upper half of the trachea, and even then the disease is not recognized usually until it is well advanced. Most patients in this series died within one year, but a few isolated patients were living as long as seven years after the initial treatment. The terminal event was usually suffocation, pneumonia (frequently in instances of tracheo-esophageal fistulas) and massive hemorrhages. The youngest patient on record was a girl 18 years of age, while the oldest patient was a man of 82. There is a marked predominance of males as victims of tracheal cancer. Sex was recorded in 116 cases and of these 63 per cent were men (forty between the fifth and seventh decades). The commonest site of the carcinomas of the trachea was in the posterior wall of its lower third. Metastases were mentioned as being present or absent in only ninety-one instances. In sixty-two cases metastases were described, while they were definitely mentioned as being absent in only twenty-nine cases. The decades in which carcinoma is most frequent show a corresponding increased incidence of metastases. The commonest type of carcinoma is

metastasize was the squamous cell variety. Thirty-eight unquestionable cases of squamous cell carcinoma were found. Only twenty-six definite adenocarcinomas were found, but it is probable that many of the alveolar and medullary growths belong in this group. Some of the squamous cell tumors were assumed to be new growths from embryonic arrests of esophageal epithelium in the trachea, while others were assumed to be the result of metaplasia. Two case studies of primary carcinoma of the trachea are cited.

Bactericidal Radiation in Operating Room.—During the last fifteen months Hart performed 132 extrapleural thoracoplasties on fifty-nine patients in a field of air sterilized by means of bactericidal radiant energy. For purposes of comparison similar statistics are given for the 110 thoracoplasties (individual stages) performed between 1930 and 1936 when the air in the operative field was not sterilized. The total mortality has been cut in half by the elimination of severe infections of the wound. There have been three deaths in the former series compared to six deaths in the latter. Before beginning the use of bactericidal radiation thoracoplasties were drained, since there was an occasional severe infection which necessitated opening the wound widely. Four of the six patients died as a result of the infection. Records show that an organism, usually the hemolytic *Staphylococcus aureus*, was cultured from the wound in 33 per cent of the cases. In the first three patients operated on in a field of bactericidal radiation drainage was instituted. Cultures of the drains on removal failed to show any growth and drains have not been inserted at operation since that time. There have been five infections (3.8 per cent), only one of which was severe, and this was the only one which occurred in a primary incision (46 per cent of the total operations). The other four followed reopening of the wound for the second or third time. It is the author's impression that, in the four cases in which infection followed reopening of the wound, the organisms gained entrance to the subcutaneous tissues along the skin sutures from the preceding stage. Recently incisions which would have to be reopened have been closed with a subcuticular suture of wire and infection has not occurred. During the cooler part of the year 72 per cent of the operations performed in sterilized air were followed by a temperature between normal to 100.4 F., while in the hotter months only 51 per cent of the operations were followed by a comparably low temperature. The rise in temperature also varied with the stage of the thoracoplasty. The duration of the elevated temperature has been greatly shortened by sterilizing the air. When the air has been irradiated, wounds have healed more rapidly and with less reaction when reopened for the second and third stages than in those cases in which radiation was not used. The postoperative condition of the patient has been greatly improved. In practically all cases the postoperative pain has been less and convalescence has been more rapid than in the cases in which radiation was not used. The interval between stages has been shortened to from thirteen to sixteen days in most of the recent cases. The later stages are performed by reopening and extending the former incision rather than by making a new incision.

Kansas Medical Society Journal, Topeka

39: 237-280 (June) 1938

- Case History in Heart Disease. P. Morgan, Emporia.—p. 239.
Use of Metrazol in Treatment of Schizophrenia. R. M. Fellows and M. E. Hyde, Osawatomie.—p. 244.
Case of von Recklinghausen's Disease or Neurofibromatosis, Involving Cranial and Peripheral Nerves. M. Gerundo and W. W. Corwin, Topeka.—p. 250.
Syphilis Control in Sedgwick County. J. V. Van Cleve and C. Miller, Wichita.—p. 254.

Nebraska State Medical Journal, Lincoln

23: 201-240 (June) 1938

- Question of Septicemia. E. B. Reed, Lincoln.—p. 201.
Operative Treatment of Echinococcosis with Gauze Packing. S. J. Carnazzo, Omaha.—p. 207.
Tumors of Neck: Their Diagnosis and Treatment: Part III. Cervical Cysts and Fistulas. N. F. Hicken and A. M. Popma, Omaha.—p. 209.
Id.: Part IV. Cervical Lipomas, Neurofibromas and Lymphomas. N. F. Hicken, H. B. Hunt and A. M. Popma, Omaha.—p. 212.
Early Symptoms of Glaucoma. G. B. Potter, Omaha.—p. 216.
Hysteria versus Malingering. G. Neuhaus, Omaha.—p. 217.
Virus Diseases of the Nervous System. R. H. Young, Omaha.—p. 220.

New England Journal of Medicine, Boston

218: 905-946 (June 2) 1938

- The Passing of Surgical Yeomen. A. G. Rice, Springfield, Mass.—p. 905.
The Relation of Newer Drugs to Public Health. G. P. Grabfield, Boston.—p. 911.
The Medicolegal Examination of Hairs. B. M. Vance, New York.—p. 914.
Progress in Diabetes Mellitus. H. F. Root and A. Marble, Boston.—p. 918.

218: 947-990 (June 9) 1938

- Conservative Methods in Surgery of the Chronically and Severely Infected Kidney. D. M. Davis, Philadelphia.—p. 947.
Intraperitoneal Rupture of Urinary Bladder. E. A. Gaston, Framingham, Mass.—p. 958.
Recent Progress in Physiology. H. E. Hoff, New Haven, Conn.—p. 964.

New Jersey Medical Society Journal, Trenton

35: 345-404 (June) 1938

- Nose and Throat Infection as Cause of Ocular Disease. E. C. Kern, Montclair.—p. 350.
A Five Year Survey of 1,412 Cases of Appendicitis in a Suburban Hospital. R. T. Munger and M. L. Griswold Jr., Plainfield.—p. 355.
More Common Cardiac Affections and Their Treatment. S. A. Loewenberg, Philadelphia.—p. 360.
*Preoperative Enhancement of Pleural Defense Mechanism. R. H. Dieffenbach and S. Berg, Newark.—p. 367.
The Newborn: Maternal Welfare Article Number Twenty-Six. R. E. Wright, East Orange.—p. 369.

Defense Mechanism of the Pleura.—Dieffenbach and Berg thought that stimulation of the defense mechanism of the pleura would be beneficial in some operative cases, and accordingly a preliminary study was undertaken in six cases to determine the response to the injection of 15 cc. of a 0.5 per cent aleuronat-1.5 per cent starch suspension in saline solution into the pleural cavity after a small initial pneumothorax. Blood and exudate studies were made at varying intervals thereafter. Although there were wide individual variations, the leukocytes tended to rise after the injection. Mononuclears arc continually withdrawn from the blood stream, apparently because the rate of mobilization is greater than the rate of supply. There is a slight but definite increase in the percentage of myelocytes, while the total number and relative proportion of granular cells decreases in the first half hour, apparently because of rapid mobilization, and then rises gradually and continuously. The immature forms show the same relative variation but, peculiarly, the percentage is not as high as one would expect from the presence of myelocytes. The average differential counts of stained smears of the pleural exudate were as follows: first day 98 per cent of polymorphonuclears and 2 per cent of mononuclears and, respectively, second day 87 and 13 per cent, third day 72 and 28 per cent, and fourth day 65 and 35 per cent. A piece of parietal pleura obtained from one patient two days after injection showed, on section, marked polymorphonuclear infiltration of connective tissue, with a few scattered reticular cells. Practically all the polymorphonuclears in the exudate and in the tissue were of the mature type. Since these determinations were made on patients who subsequently refused surgical intervention, no estimate can be made as to the value of the procedure in reducing the incidence or degree of postoperative pleural infection.

Northwest Medicine, Seattle

37: 161-196 (June) 1938

- Pelvic Gonorrheal Infection. M. S. Sichel, Portland, Ore.—p. 161.
Lateral Lumbosacral Articulation. T. E. P. Gocher, San Francisco.—p. 167.
Operative Treatment for Flat Feet. D. G. Leavitt, Seattle.—p. 168.
Nonpenetrating Abdominal Injuries: Their Surgical Management. J. Duncan and R. D. Forbes, Seattle.—p. 172.
Infantile Scurvy. R. M. Overstreet, Portland, Ore.—p. 175.
Ischioanal Abscess Caused by Oxyuris Vermicularis. G. R. Marshall and Q. L. Wood, Seattle.—p. 180.
Some Novel Manifestations of Ascariasis. W. L. Voegtlin, Seattle.—p. 182.
*Coexisting Pulmonary Tuberculosis and Primary Carcinoma of Lung. C. P. Larson, Fort Steilacoom, Wash.—p. 183.

Pulmonary Tuberculosis and Carcinoma.—Larson cites two cases of coexisting pulmonary tuberculosis and primary carcinoma of the lung. In one case the pulmonary tuberculosis was active and in the other there was no evidence of activity. However, the tumor in the second case originated in close prox-

imity to the site of the inactive, healed tuberculous lesion. In the author's opinion both of these cases would tend to substantiate Ewing's opinion that tuberculosis is one of the etiologic factors in the production of primary carcinoma of the lung.

Oklahoma State Medical Assn. Journal, McAlester

31: 185-226 (June) 1938

- Syphilis of the Eye. F. T. Gastineau, Vinita.—p. 185.
Syphilis and Public Health. C. M. Pearce, Oklahoma City.—p. 189.
The Management of Early Syphilis. D. V. Hudson, Tulsa.—p. 192.
Syphilis in Pregnancy. F. A. DeMand, Oklahoma City.—p. 195.
Latent and Somatic Syphilis. J. Stevenson, Tulsa.—p. 198.

Psychoanalytic Quarterly, Albany, N. Y.

7: 171-298 (April) 1938

- Sense of Immortality. G. Zilboorg, New York.—p. 171.
Adaptation to Reality in Early Infancy. Therese Benedek, Chicago.—p. 200.
Psychoanalytic Study of Case of Chronic Exudative Dermatitis. L. H. Bartemeier, Detroit.—p. 216.
Poetry Production as a Supplemental Emergency Defense Against Anxiety. H. B. Levey, Chicago.—p. 232.
Types of Adolescence. S. Bernfield, San Francisco.—p. 243.
Use of Hostility as Defense. L. B. Hill, Baltimore.—p. 254.

Radiology, Syracuse, N. Y.

30: 667-796 (June) 1938

- Calcification and Ossification of Kidney: Review of Literature and Report of Cases. A. E. Goldstein and B. S. Abeshouse, Baltimore.—p. 667.
Roentgen Treatment of Chronic Sinusitis. F. E. Butler and I. M. Woolley, Portland, Ore.—p. 686.
Pain: Its Surgical Relief and Role of X-Ray Localization Therein. M. B. Greene and J. Kaufman, Brooklyn.—p. 691.
Biologic Influence of Gamma Rays on Glandular and Hair System of Skin in Normal and Pathologic Conditions. V. Palumbo, Florence, Italy.—p. 705.
Dosage, Duration of Treatment and Reactions in Protracted Fractional Roentgen Treatment, with Special Reference to Carcinoma of the Upper Air Passages. J. Juul, Copenhagen, Denmark.—p. 718.
Apophysial Intervertebral Articulations, Roentgenologically Considered. A. Oppenheimer, Beirut, Lebanon, Syria.—p. 724.
*Primary Bronchus Carcinoma: Diagnostic and Therapeutic Consideration. W. L. Mattick, Buffalo.—p. 741.
Effect of Fractional Roentgen Technic on Incidence of Vaginal Fistulas in Carcinoma of Cervix. F. R. Smith, New York.—p. 748.
Direct Radiocinematography. Van de Maele, Brussels, Belgium.—p. 750.
Radiotherapy of Bladder Carcinoma: Five Year Results: Failures: Future Therapy. B. S. Barringer, New York.—p. 756.

Primary Bronchus Carcinoma.—Mattick reviews the seventy-three cases of bronchus carcinoma seen at the State Institute. The diagnosis was proved in sixty-five cases by histopathologic section on biopsy or necropsy, or both. Histopathologic studies of the available material in sixty-two cases revealed a pleomorphism in most, with a tendency to predominating cell types or groups, depending on the degree of differentiation, into adenocarcinomatous, squamous cell and anaplastic tendencies. A grouping of roentgenographic characteristics showed, in the order mentioned, atelectasis, increased markings and a tumorous mass to be the three most frequent changes. Atelectasis is a common indirect observation in the hilar or central variety, and the direct visualization of the mass is commonly seen in the peripheral tumors. No apparent association could be observed between the histologic type and the period of survival, which in the treated cases was only slightly longer than in the untreated. Neither radical surgery nor irradiation seems to warrant much optimism in the majority of these cases. Owing to the tendency to early and distant metastasis and the more advanced and unfavorable locations of the tumors, it seems advisable to persist in attempts at more intensive and better planned radiation therapy. Few patients with peripheral lesions will submit to radical thoracic surgery. Only earlier recognition and radiation therapy will be conducive to a better prognosis.

Rhode Island Medical Journal, Providence

21: 87-98 (June) 1938

- Nonspecific Measures in Treatment of Pneumonia. C. F. Gormly, Providence.—p. 87.
Bacteremia in Pneumonia. Esther E. Brintzenhoff, Providence.—p. 89.
Some Physiologic Aspects of an Efficient Diabetic Regimen. D. L. Davidson, Boston.—p. 90.
Survival Rates Among Patients with Active Pulmonary Tuberculosis. Katharine Pardee, Wallum Lake.—p. 91.

Surgery, St. Louis

3: 805-972 (June) 1938

- Effect of Recent Advances in Biliary Physiology on Mortality Following Operation for Common Duct Obstruction. I. S. Ravdin, J. E. Rhoas, W. D. Frazier and A. W. Ulin, Philadelphia.—p. 805.
Applied Physiology of Liver. L. A. Crandall Jr. and A. C. Ivy, Chicago.—p. 815.
Noncalculous Cholecystitis. W. H. Cole, Chicago.—p. 824.
Roentgen Diagnosis of Surgical Diseases of Liver and Biliary Tract. E. P. Pendergrass and G. W. Chamberlin, Philadelphia.—p. 840.
Anatomy of Gallbladder Incisions. O. V. Batson, Philadelphia.—p. 871.
Preoperative and Postoperative Treatment in Cases of Obstructive Jaundice. C. G. Johnston, Detroit.—p. 875.
Personal Experiences in Treatment of Benign Obstructing Lesions of Biliary Tract. W. Walters, Rochester, Minn.—p. 884.
Ligation and Refrigeration of Intestine. F. M. Allen, New York.—p. 893.
*Experimental Attempts to Prevent or Abolish Hypertension That is Associated with Renal Ischemia. S. E. Levy and A. Blalock, Nashville, Tenn.—p. 899.
Pathogenesis of Seminoma of Testis: Histologic Study in Dogs. J. R. McDonald, C. F. Schlotthauer and J. L. Bollman, Rochester, Minn.—p. 904.

Experiments to Prevent Hypertension.—Levy and Blalock attempted to influence the response to experimental renal ischemia in dogs by (1) anastomosis of the renal vein to the portal system, (2) previous damage to kidneys produced by temporary occlusion of renal veins, (3) partial constriction of the renal veins in the presence of hypertension, (4) removal of the adrenal on the side in which renal ischemia is produced, (5) the freeing of the adrenals except for small attachments along the renal pedicle, (6) removal of one adrenal and denervation of the remaining one by transplanting it to the neck, and (7) hyperpyrexia. All these attempts were unsuccessful in altering the response of the blood pressure to renal ischemia. A severe illness such as distemper is usually accompanied by a decline in the elevated blood pressure that is associated with experimental renal ischemia.

Texas State Journal of Medicine, Fort Worth

34: 65-192 (June) 1938

- The Responsibility of the Physician. C. R. Hannah, Dallas.—p. 72.
Modern Problems of Medical Practice. J. H. J. Upham, Columbus, Ohio.—p. 75.
Memorial Address. J. M. Martin, Dallas.—p. 79.

Wisconsin Medical Journal, Madison

37: 445-528 (June) 1938

- Heart Disease and Heart Failure. J. H. J. Upham, Columbus, Ohio.—p. 459.
Low Cervical Cesarean Section versus Classic Cesarean Section. R. E. Campbell, Madison.—p. 463.
Modification of the Mosher Toti Operation. F. S. Cook and P. G. Spellbring, Eau Claire.—p. 466.
Hormones of Anterior Lobe of Pituitary Body. E. H. Ryneerson, Rochester, Minn.—p. 469.
Benign Lesions of the Breast Which Simulate Malignancy. F. A. Stratton, Milwaukee.—p. 474.
Lymphosarcoma of the Jejunum: Case Report. A. S. Jackson, Madison.—p. 478.
*An Outbreak of Trichiniasis in East Central Wisconsin: Report of Fifteen Cases. G. W. Carlson, Appleton.—p. 481.

Trichiniasis in Wisconsin.—Carlson reports an outbreak of twenty-eight cases of trichinosis resulting from the ingestion of uninspected pork obtained from a local butcher. The butcher had purchased the meat from two local farmers in the form of summer sausage. Sausage was obtained from the butcher and examined in the laboratory of the state board of health; Trichinella spiralis was found. Fifteen cases have been selected for study. In all of them there was medical supervision during the illness and careful investigation. The disease attacked all the members of each family with but three exceptions; in each instance the pork had not been eaten by those unaffected. The majority of the fifteen cases showed an eosinophilia, a leukocytosis and a relatively low percentage of neutrophils. Eosinophilia of more than 10 per cent, and especially a rising eosinophilia during the course of the infection, should suggest trichinosis. If, in addition, there is a history of eating undercooked pork and if typical symptoms are present, the diagnosis of trichinosis would appear certain. No specific remedy is known. Early catharsis, colonic irrigation and a high caloric diet may be beneficial. The use of the Baclman intradermal cutaneous test in a 1:10,000 dilution of antigen should supplement the performance of biopsy in diagnosing trichinosis when powdered trichinella larvae for antigen becomes available.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

50: 267-332 (June) 1938

Cutaneous and Subcutaneous Calcinosis. F. R. B. Atkinson and F. P. Weber.—p. 267.

British Journal of Ophthalmology, London

22: 257-320 (May) 1938

Smooth Muscle of the Periorbit and Mechanism of Exophthalmos. C. E. Brunton.—p. 257.

Corneoscleral Suture in Cataract Extraction: Its Technic and Advantages. H. B. Stallard.—p. 269.

Intracapsular Expression of Cataract. C. V. Krishnaswami.—p. 274.

Transplantation Conchae Auriculæ as New Method of Correcting Spastic Entropion of Upper Lid Following Total Tarsectomy. N. I. Shimkin.—p. 282.

Antepositis Conjunctivæ Fornicis: Operation in Severe Cases of Spring Catarrh. N. I. Shimkin.—p. 287.

Angioma Retinae: Case. I. Feig.—p. 295.

Microstructure of Epithelial Cells and Its Importance for Etiology of Trachoma. W. Grütter.—p. 300.

22: 321-384 (June) 1938

Visual Cells of the Platypus (*Ornithorhynchus*). K. O'Day.—p. 321.

*Osmotic Pressure of Aqueous Humor in Epidemic Dropsy Glaucoma. E. O'G. Kirwan and S. N. Mukerjee.—p. 329.

Studies on Pathogeny of Trachoma. L. A. Julianelle.—p. 336.

Melanosome-Dispersing Substance in Blood and Urine of Patients with Retinitis Pigmentosa: Preliminary Communication. E. C. Dax.—p. 345.

Primary Bilateral Anophthalmia: Clinical and Histologic Report: Case. E. Recordon and G. M. Griffiths.—p. 353.

Osmotic Pressure of Aqueous Humor.—Kirwan and Mukerjee state that in glaucoma of epidemic dropsy the difference between the osmotic pressure of blood serum and the aqueous humor is considerably reduced as a result of the appearance of proteins in the latter. In consequence a reshuffling of ions takes place exactly in the same direction as predicted by the hypothesis of membrane equilibrium. The concentration of chlorine ions diminishes in the aqueous humor while an increase can be observed in the serum. The evidence tends to support the view that in glaucoma of epidemic dropsy the filtration of fluid into the anterior chamber takes place by the process of dialyzation as usual but that the equilibriums concerned are at a level different from that of normal subjects, owing probably to the altered permeability of the dialyzing membrane.

British Medical Journal, London

1: 1085-1142 (May 21) 1938

Typhoid Fever: Its Clinical Aspects. W. Wilcox.—p. 1085.

Prophylactic Use of Antityphoid Serum in a Localized Outbreak. J. Fenton, A. Felix and C. P. Hay.—p. 1090.

*Outbreak of Sonne Dysentery Due to Consumption of Milk. G. K. Bowes.—p. 1092.

Gonadotropic Activity of Anterior Pituitary Gland in Relation to Increased Intracranial Pressure. W. R. Henderson and I. W. Rowlands.—p. 1094.

Biologic Nature and Quantitative Variation of Gonadotropic Activity of Pregnant Women's Serum. M. Boycott and I. W. Rowlands.—p. 1097.

*Treatment of Chancroid with Sulfanilamide. R. C. L. Batchelor and R. Lees.—p. 1100.

Sonne Dysentery Due to Milk.—Bowes gives an account of an outbreak of Sonne dysentery due to milk. Fifty-nine from 106 households, or ninety-six of 224 individuals (estimated), were affected. The incubation period was usually from twelve to twenty-four hours. Symptoms as a rule lasted from twelve to thirty-six hours. The symptoms in most cases were mild and consisted of abdominal pain, vomiting and diarrhea for from twelve to thirty-six hours. Medical advice was sought by only a few persons, and only a few mentioned the passage of blood and mucus in the feces. In a few instances the diarrhea persisted for some days and was accompanied and succeeded by a period of weakness. Sonne dysentery bacilli were isolated from the feces of some of the patients and from the milk itself. The actual source of infection of the milk remains untraced.

Treatment of Chancroid with Sulfanilamide.—Batchelor and Lees treated ten cases of chancroid with sulfanilamide by mouth. Four cases represented relapses after treatment with melcos vaccine. Cure was effected in all. The number of days

for cure to take place varied from five to eleven; the average was nine days. The average dose of sulfanilamide was 50 Gm. The dosage varied from 34 to 76 Gm. The use of sulfanilamide is not devoid of risk. One patient had eaten three eggs and had taken two acetylsalicylic acid tablets during five days of treatment. After 34 Gm. of sulfanilamide in five days he vomited, the pulse rate was 120 per minute and the temperature was 102.2 F. Even the exertion of speaking tired him. The chancroid, however, healed rapidly, with prompt subsidence of the adenitis without abscess formation. In one case the ulcers healed rapidly under sulfanilamide treatment but there was evidence of generalized syphilis, and positive Wassermann and Kahn tests were obtained three weeks later. Sulfanilamide in chancroid is suitable for treating ambulatory patients and outpatients, but strict supervision and full cooperation are required when large doses are given.

Edinburgh Medical Journal

45: 373-460 (June) 1938

Observations on Carbonic Anhydrase of Blood in Anemia and in Other Pathologic Conditions. C. G. Lambie.—p. 373.

Clinical Recollections and Reflections: XXV. The Dietetic Treatment of the Average Diabetic. D. M. Dunlop and Ruth Pybus.—p. 415.

Diet and Dyspepsia. J. D. Comrie.—p. 435.

Indian Medical Gazette, Calcutta

73: 257-320 (May) 1938

Anemias in Pregnancy: Hematologic, Clinical and Statistical Study. S. Choudhury and V. S. Mangalik.—p. 257.

Some Clinical Aspects of Anemia in Pregnancy in Indian Women Living in Bengal. H. N. Chatterjee.—p. 267.

Incidence of Rheumatic Infection in India (as Judged by Admission and Postmortem Rates and by Clinical Experience of Teaching Physicians at Medical Colleges and Schools of India): Part II. H. Stott.—p. 271.

Appendix: Note on Juvenile Type of Rheumatism in Bengal. E. H. Vere Hodge.—p. 275.

Short Note on Epidemic of Chickenpox in Central Jail, Cannaure. P. V. Karanchandani.—p. 276.

Adrenal Insufficiency Simulating Adams-Stokes' Syndrome: Case. E. S. Phipson.—p. 277.

Study of Dietary Habits of Some Communities Living at Calcutta. D. D. Mitra.—p. 280.

The Guinea Pig in the Laboratory Diagnosis of Tuberculosis. R. K. Goyal.—p. 282.

Specific Gravity of Serum of Epidemic Dropsy Patients. C. L. Pasricha, S. Lal and K. S. Malik.—p. 283.

Method of Antilaval Oiling for Rivers. D. Manson.—p. 284.

Journal of Hygiene, London

38: 269-394 (May) 1938

Commercial and Molecular Distillates of Mineral Oils in Relation to Their Carcinogenicity. R. Lyth and C. C. Twort.—p. 269.

Importance of Receptor Analysis for Study of Physicochemical Properties of Typhoid Bacilli. R. T. Scholtens.—p. 273.

Antigenic Activity of Extracts of Pneumococci. A. W. Downie.—p. 279.

Antipneumococcus Species Immunity. A. W. Downie.—p. 292.

Leukopenia and Toxic Substances of Bacillus Typhosus. R. C. Robertson and H. Yu.—p. 299.

New Salmonella Type: Salmonella Kentucky. P. R. Edwards.—p. 306.

Comparison of Two Methods of Assessing the Number of Different Types of Coliform Organisms in Water. Doris A. Bardsley.—p. 309.

Horse Serum Skin Tests. Hilda M. Davis.—p. 325.

*Ice Cream Food Poisoning Outbreak Due to Bacillus Dysenteriae (Sonne). W. Savage.—p. 331.

Observations on Bacterial Flora of Hen's Egg, with Description of New Species of Proteus and Pseudomonas Causing Rots in Eggs. R. B. Haines.—p. 338.

Effects of Lifelong Subsistence on Diets Providing Suboptimal Amounts of "Vitamin B Complex." J. C. Drummond, Audrey Z. Baker, Margaret D. Wright, Phyllis M. Marrian and Eleanor M. Singer.—p. 356.

Excretion of Streptococcus Pyogenes in Milk of Naturally Infected Cows. H. C. Bendixen and F. C. Minnett.—p. 374.

Milk Epidemic of Angina, Originating from a Cow with Mastitis and Due to Streptococcus Pyogenes (Lancefield Group A). E. J. Henningsen and J. Ernst.—p. 384.

Action of Carcinogenic Tar on Lymph Glands. A. Lasuitzki.—p. 392.

Food Poisoning from Ice Cream.—A medical officer of health reported that at a fete at Dowlsh Wake on May 17, 1937, a number of children were taken ill after eating ice cream; most of the cases developed from twenty-four to forty-eight hours after its ingestion. Subsequently a number of other cases came to light associated with the consumption of ice cream but the infection occurred on other dates. Definite cases traced directly to infection from ice cream were thirty-four on May 17, nine-

teen on May 23 at Chard Rural and Ilminster districts, twenty-six on May 23 at Thorncombe, three on May 23 and four (probably secondary) on May 29 or 30 at Crewkerne and thirty-six on May 23 at Chard Borough. The ice cream was not infected with dysentery bacilli before May 17. The motorcar of the vender (H.) selling the incriminated ice cream was in the field, and in all the thirty-four known cases the infection occurred there. No cases were associated with a second ice cream vender who sold ice cream from just outside the field. The same vender's ice cream was again toxic on May 23 and was particularly infective on that day, for wherever vender H. went the ice cream purchased caused dysentery. There is no real evidence that the ice cream was infective on any later date. While there was a certain amount of variation, Savage says that the common symptoms were abdominal pain, vomiting and diarrhea. The stools were often stained with blood and contained mucus. Usually there was some rise of temperature. Convulsions were observed in a few very young children. The illness was comparatively mild, lasting from three to seven days with about four days as the average but leaving some debility. There were no deaths. Over the period when the ice cream was infective, i. e., up to May 25, it was made under insanitary conditions. Both H. and his wife, who participated in the business, deny that they had diarrhea or had been ill in any way. H. had been in the business for a good many years and no evidence of previous outbreaks had been associated with him. There was complete evidence implicating the ice cream but no real evidence as to how it became infected. The milk used was exonerated and that H. or his wife was a carrier of the bacillus was the most likely hypothesis, the single negative results of two very unsatisfactory samples of feces being of no weight. Careful supervision was maintained over the further preparation and sale of the ice cream and no further cases resulted.

Journal of Laryngology and Otology, London

53: 355-416 (June) 1938

Some Clinical Aspects of Vocal Cord Inaction. H. Tilley.—p. 355.
The Administration of a Hearing Aid Clinic. Phyllis M. Tookey Kerridge.—p. 370.

Journal of Pathology and Bacteriology, Edinburgh

46: 401-648 (May) 1938. Partial Index

- *Pathogenesis of Pulmonary Schistosomiasis in Egypt, with Special Reference to Ayerza's Disease. A. F. B. Shaw and A. A. Ghareeb.—p. 401.
Acute Hemorrhagic Encephalitis Associated with Acute Rheumatism. R. H. Dobbs and G. S. W. de Saram.—p. 437.
Lymphadenoid Gitter: Study of Thirty-Eight Cases. Dorothy M. Vaux.—p. 441.
Massive Replacement of Pancreas by Adipose Tissue. T. B. Davie.—p. 473.
*Infection Experiments with Virus-like Bodies from Rheumatism. G. H. Eagles, P. R. Evans, J. D. Keith and A. G. T. Fisher.—p. 481.
Identification of Living Unstained Leukocytes by Dark-Ground Illumination. L. E. H. Whitby and M. Hynes.—p. 517.
Splenic Reaction in Experimental Cirrhosis and in Precirrhotic Intoxication. T. B. Menon.—p. 521.
Preparation of Gold Sols for the Lange Test. S. W. Pennycuik, C. E. Woolcock and R. J. Cowan.—p. 549.
Liver and Atropine Disposal. G. S. W. de Saram.—p. 559.
Type Specific Bacteriophages for *Corynebacterium Diphtheriae*. E. V. Keogh, R. T. Simmons and G. Anderson.—p. 565.
Intracutaneous Rabbit Test for Assay of Antipneumococcus Serum. J. Ipsen Jr.—p. 571.
Influence of Ascorbic Acid on Growth and Toxin Production of *Clostridium Tetani* and on Detoxication of Tetanus Toxin. I. J. Kligler, K. Guggenheim and F. M. Warburg.—p. 619.

Pulmonary Schistosomiasis in Egypt.—Shaw and Ghareeb found from a study of 282 necropsies on Egyptians suffering from schistosomiasis that pulmonary lesions due to eggs of *Schistosomum* were present in 33 per cent. The toxic effect of the egg is shown by necrosis of the tissue in its vicinity. The amount of necrosis varies and possibly depends on the degree of allergy at the time of the invasion. The number of eggs, reinfection, immunity and allergy may all play a part in determining the type of response. The number of eggs is of primary importance in determining the effect on the pulmonary tissue. In 86 per cent of cases only a few eggs had entered the lungs and the only lesions present were parenchymatous tubercles. In cases with a heavier infestation vascular lesions as well as parenchymatous tubercles are present and embolic

eggs are frequent. Healing of the acute vascular lesions leads to an obliterative arteriolitis, often followed by canalization of the occluding tissue. The new-formed capillaries hypertrophy, producing a structure characteristic of pulmonary bilharziasis. The vascular changes are focal in distribution and are unassociated with cardiac hypertrophy or signs of congestive cardiac failure. Massive and repeated infection of the lungs is followed by widespread arterial changes, hypertrophy of the right ventricle and the development of the cardiopulmonary features of Ayerza's disease with death from congestive heart failure. The severity of the disease is largely due to repeated reinfection of healing or healed lesions. Worms were present in the lungs in 3.6 per cent of the series and in 10.5 per cent of the pulmonary cases. Either *Schistosomum haematobium* or *Schistosomum mansoni* may occur. The worms reach the lungs by the pulmonary artery and are usually arrested as riding emboli at the bifurcation of a vessel. Although bathed in venous blood, they die rapidly. While alive they produce no structural changes, but the dead worm is highly toxic, causing necrosis of the artery and an acute focal necrotizing pneumonia. Later the pneumonic exudate is absorbed and cicatrized but the defunct worm becomes calcified and enveloped in scar tissue.

Virus-like Bodies from Rheumatism.—Eagles and his co-workers tested for infectivity in monkeys, both alone and in combination with streptococcus toxin and streptococci, the virus-like bodies in suspensions prepared from a variety of rheumatic materials. In certain instances clinical observations, including the frequent taking of electrocardiograms and erythrocyte sedimentation rates, have suggested possible cardiac damage as a result of the inoculations. Physical signs and abnormalities in electrocardiographic records were suggestive, but these have not been supported by pathologic changes. Myocardial damage has been present, with collections of the inflammatory cells commonly associated with Aschoff nodes in human rheumatic carditis; but the multinucleated giant cells which are a constant feature of these nodes could not be demonstrated nor did the cell collections bear more than a superficial resemblance to the true Aschoff node. Endocarditis and pericarditis were not present in any of the animals examined after death. Within the limits of the study no evidence has been obtained that the suspensions of these bodies possess infectivity.

Medical Journal of Australia, Sydney

1: 835-874 (May 14) 1938

- Critical Inquiry into the Etiology of Chronic Peptic Ulcer. H. C. Rutherford.—p. 835.
Physical Efficiency of Recruits for the New Zealand Permanent Forces. F. T. Bowerbank.—p. 841.
Periarthritis Nodosa: Report of Two New Cases. J. B. Cleland.—p. 846.
Supervision of Air Traffic from Overseas and Its Attendant Risks. F. W. A. Ponsford.—p. 848.
Preliminary Survey of Types of *Corynebacterium Diphtheriae* Isolated at the Metropolitan Infectious Diseases Hospital, Northfield. Mary C. Puckey.—p. 851.
Some Aspects of Maxillary Antrum Infection. R. H. Bettington.—p. 853.
1: 875-910 (May 21) 1938
Medical Men as Explorers. L. Duncan.—p. 875.
Carcinoma of Cervix from the Point of View of the General Practitioner. F. B. Craig.—p. 886.
Physical Therapy in Otolaryngology. E. Gutteridge.—p. 889.
Adhesions In and Around Joints. N. Little.—p. 891.
*Migraine from the Allergic Point of View: Results of Treatment in 105 Cases. C. Sippe.—p. 893.
Effect of Thyroxamine Administration on Implanted Tumor of the Mouse: Note. W. Moppett.—p. 895.

Migraine and Allergy.—Sippe reports the results of allergic treatment in 105 consecutive cases of migraine. Recent work suggests that the hereditary factor in migraine is the allergic element, as in asthma. The headache is not necessarily unilateral, preceded by aura or accompanied by abdominal symptoms, and also abdominal symptoms may occur without the headache. Many recurring or even nonsymptomatic dyspepsias may belong to the group of gastrointestinal allergy. Cutaneous tests performed by the intradermal method are a good guide for the initial diet, especially if doubtful and delayed reactions are considered. The leukopenic index, whereby the effect of a particular food on the leukocyte count is recorded, gives useful information but needs much time and care. The results of the

cutaneous tests performed by the intradermal method agreed closely with clinical observations. Complete elimination of the offending food is the most certain way of obtaining relief. When this is not possible, peptones have sometimes given relief. Either complete or partial relief was obtained in 84.8 per cent. A common type of headache occurring in food allergy is that which appears on waking or on arising in the morning and is associated with sneezing or a stuffy nose. It is of a throbbing nature, located in the frontal or occipital region. If the attack occurs only with menstruation, it appears to be rarely due to food allergy, although if it occurs at other times as well the attacks will usually respond to allergic treatment.

Archives de Médecine des Enfants, Paris

41: 321-424 (June) 1938

- Erythroblastosis During Childhood. M. Péhu and R. Noel.—p. 321.
Contribution to Study of Erythroblastoses: Case of Familial Erythroblastosis. A. Flax and M. Waldstein.—p. 346.
*Contribution to Study of Jaksch-Luzet's Anemia of Familial Form of Cooley Type. A. Santillana.—p. 356.
Contribution to Study of Hematology: Obscure Medullary Disorder Revealed by C Avitaminosis; Normoblastosis. G. Mouriquand, L. Weill, V. Edel and J. Ferri.—p. 369.

Jaksch-Luzet's Anemia of Familial Type.—Santillana points out that there exist in nurslings grave anemic syndromes that are accompanied by an enlargement of the spleen. Among these there is a form which on the basis of its clinical characteristics and of its hematologic aspects belongs to the pseudo-leukemic anemia described by von Jaksch and Luzet in 1889 and 1891. Of unknown etiology, it is characterized by great pallor, by splenomegaly of variable degrees, by a more or less pronounced cachexia and by osseous changes. Luzet in studying the hematologic aspects observed a reduction in the hemoglobin and in the number of erythrocytes, a progressive augmentation of the leukocytes (pseudoleukemic anemia) and finally morphologic changes in the erythrocytes. The author cites several Italian authors who in recent years have called attention to the familial occurrence of a splenic anemia. Then he mentions a Greek author who described fifty-four cases of the pseudo-leukemic anemia of von Jaksch-Luzet and who maintained that this type is frequent in Greece. The familial character could be demonstrated in some of these cases. Then the author directs attention to studies by Cooley, who observed a characteristic type of anemia in the children of immigrants from the Mediterranean countries, particularly in Greek, Italian and Armenian children. Among the chief symptoms of Cooley's type of anemia are great pallor of the skin with a subicteric tinge, increase in the volume of liver and spleen, considerable diminution in the number of erythrocytes with constant erythroblastosis, frequently a leukocytosis, and an increased resistance of the blood corpuscles. Some are of the opinion that the Mediterranean anemia described by Cooley is identical with that already known under the term of Jaksch-Luzet's anemia but that Cooley's description is of great value, because it directs attention to the osseous changes which characterize this type of anemia. The author relates the histories of four anemic children of a Sicilian family who lived in Tunis, where they came under his observation. He describes the general symptoms, the hematologic aspects and particularly the roentgenologic pictures of the changes in the bones. Considering all these aspects, he decides to apply to this familial form of pseudo-leukemic anemia with the roentgenologically demonstrable osseous changes the term "syndrome of Jaksch-Luzet and Cooley."

Presse Médicale, Paris

46: 897-912 (June 8) 1938

- *Chemical and Therapeutic Studies of Tetany. R. Leriche and A. Jung.—p. 897.
Massive Coagulation of Pleural Liquid: Sign of Compression of Hilus Vessels by Neoplastic Process. R. Poinso.—p. 899.
Parkinson's Syndrome as Complication of Acute Anterior Poliomyelitis. V. Vujic and V. Ristic.—p. 901.

Chemical and Therapeutic Studies of Tetany.—Leriche and Jung report eleven cases of tetany in which they found that the calcemia (total calcium content of serum) is not always reduced. It is often normal in spontaneous tetany, but it is

reduced in parathyropival tetany. The calciuria is reduced in the majority of cases. This reduction is independent of the diet. In rare cases it is normal or even increased. The fecal calcium is normal or slightly increased. The considerable reduction in the ratio urinary calcium/fecal calcium is essentially the result of the reduction of the calciuria. The calcium balance was found largely positive in the four cases which were investigated in this respect. The administration of calcium gluconate in two cases of tetany with low calciuria either did not influence the calciuria at all or elevated it only slightly. There are cases of tetany in which the crises do not yield to the administration of calcium, to the treatment with parathyroid extract or to the administration of dihydrotachysterol, A. T. 10. The subcutaneous transplantation of "pure bone" in three cases of tetany modified the calciuria slightly or not at all. It did not change the calcium content of the blood but it suppressed the tetanic attacks in a case of long standing, in which the tetany had persisted eighteen months. Discussing the efficacy of neuro-surgical interventions, the authors state that the median cervical sympathectomy or the denervation of the carotid sinus, which were performed in five cases of spontaneous tetany with the aim to activate the parathyroids, did not influence the calcemia (normal before the operation) and did not always modify the calciuria. But the operation generally cured the patients in whom treatment with calcium, parathyroid extract or A. T. 10 had failed. The ablation of the median ganglion seemed to be more efficacious than the denervation of the carotid sinus. It is necessary to do it on both sides, which is possible in one session. The authors gained the impression that the treatment of chronic tetany should be surgical. Spontaneous tetany is amenable to the ablation of the median sympathetic ganglion or to sinuocrotid neurectomy; in addition to this, the authors usually perform at the same time an implantation of pure bone. Parathyropival tetany is amenable to the transplantation of bone, which improves the subjective condition of the patients, counteracts the crises and the pains, and suppresses the calcium deficiency.

Jahrbuch für Kinderheilkunde, Basel

151: 117-180 (April) 1938

- *Pneumonia Mortality and Treatment of Rickets. U. Grüninger and W. Droste.—p. 117.
*Whooping Cough and Rickets.—F. Hansen.—p. 136.
Clinical Aspects and Hematology of Acute Leukemia During Childhood. E. Schmid.—p. 149.

Mortality from Pneumonia and Treatment of Rickets.—Grüninger and Droste point out that the death rate from pneumonia is comparatively high in children during the first year of life. Nevertheless at the children's clinic in Düsseldorf a noticeable decrease in the mortality from pneumonia has been observed during recent years. In order to determine what factors are responsible for this decrease, the authors analyzed the cases of pneumonia that were cared for at their clinic during the years 1924, 1926, 1928, 1930, 1936 and during the first half of 1937. The total number of cases was 1,645. There were considerable differences in the mortality in the various types of pneumonia. Discussing the lobar pneumonias, they emphasize that the uncomplicated pneumonia of one lobe heals with or without treatment. Thus, if the efficacy of a therapeutic method is to be evaluated, uncomplicated lobar pneumonia cannot serve as a criterion because its prognosis is so favorable. When disregarding the lobar pneumonias and the abscess-forming pneumonias, the authors noted that in all other types of pneumonia the nurslings with rickets had a higher death rate. They found that the fresh air treatment produced a noticeable decrease in the mortality of different types of pneumonia. In the whooping cough pneumonias and in the complicated bronchopneumonias the favorable effects of the fresh air treatment could be increased further by the viosterol treatment of the children with rickets. The successful viosterol treatment of pneumonia in rachitic children is further corroborated by the recent favorable experiences with the massive dose of vitamin D₂ in rachitic children with pneumonia.

Whooping Cough and Rickets.—Hansen says that in children with rickets whooping cough lasted longer and had a higher death rate than in children who were free from rickets.

He analyzes 907 cases of whooping cough that were treated at the Düsseldorf clinic during the years 1931 and 1932 and during 1935 and 1936. The prolongation of the process is the more noticeable, the younger the children are. It was observed also that the incidence of bronchopneumonic complications of whooping cough is twice as great in rachitic as in nonrachitic children. By energetic antirachitic prophylaxis and treatment during 1935 and 1936 the duration of whooping cough in rachitic children could be shortened; the development of bronchopneumonia could be prevented almost entirely after the third week and the mortality of rachitic children could be reduced from 11.41 per cent to 3.74 per cent. In the treatment of bronchopneumonia, which so frequently has a fatal outcome, favorable therapeutic results were obtained with viosterol.

Annali di Ostetricia e Ginecologia, Milan

60: 307-396 (April 30) 1938

Organization of Prenatal Prevention in Crusade Against Tuberculosis in Italy. E. Alfieri.—p. 307.

Clinical and Anatomic Aspects of Renal Pathology in Eclampsia of Pregnancy. G. Mulazzi.—p. 329.

Anaerobic Flora of Vagina in Normal Pregnant Women and in Puerperium. R. Vignocchi.—p. 359.

Renal Pathology in Eclampsia.—Mulazzi studied the functional behavior of the kidney in a group of pregnant women suffering from eclampsia. In thirty-three women in whom a necropsy was done the kidney showed neither congenital nor acquired chronic diseases on macroscopic study. The patients ranged in age from 17 to 45. Only two patients were more than 45. Fifteen women were pluriparas. The majority of the patients showed symptoms of intoxication several days before convulsions developed, which was generally near full term but long before the onset of labor. The author concludes that eclampsia may develop in women without relation to primiparity or multiparity. In the majority of cases eclampsia develops near full term. Oliguria and albuminuria are frequently associated with cylinduria and, in rare cases, with hematuria. There is glycosuria, alone or in association with acetoneuria, when eclampsia develops after death of the fetus. The arterial blood pressure is increased in the majority of cases and there is hyperazotemia. There is no precise anatomopathologic picture of the kidney in eclampsia in pregnancy. Renal disease is present in all cases. There may be nephrosis of a fat turbid, fat lipoid or fat necrotic type or either diffuse tubular glomerulonephrosis or acute diffuse glomerulonephritis.

Revista de Medicina Tropical y Parasitologia, Havana

4: 69-119 (March and April) 1938

*Trichomonas Vaginitis. R. Varela Zequeira.—p. 69.

Technic for Quantitative Determination of Dextrose in Blood. M. A. Landa Bacallao.—p. 79.

Trichomonas Vaginitis.—Varela Zequeira found trichomonas vaginitis in fifty-four of a group of 470 women with leukorrhea. The symptoms are characteristic and in the majority of cases there is a great amount of frothy yellow fetid discharge. The vagina, vulva and neck are irritated and the mucosa is fragile. The condition is aggravated during menstruation. The patients complain of local irritation, burning sensation, frequent small hemorrhages, vulvar pruritus, urinary disorders and general discomfort. The ages of the patients in the author's group ranged from 18 to 44 years. There were three virgins. In all cases the author obtained satisfactory results from Gellhorn's treatment with acetarsone, which was reported in THE JOURNAL, June 3, 1933, page 1765.

Vida Nueva, Havana

41: 335-384 (June 15) 1938

*Frambesia in Cuba. V. Pardo-Castelló.—p. 335.

Myocarditis: Modern Clinical Conceptions. C. F. Gómez González.—p. 346.

Brenner Tumor. Case. E. Eleizgui.—p. 361.

Frambesia in Cuba.—Pardo Castelló found that in 1937 frambesia existed only in Oriente province of Cuba. The total number of cases in the province was 274. The lesions are of the type commonly reported. Chronic osteoperiostitis with

destruction of the bone and mutilations or enlargement of certain bones, especially the tibia, are frequent. Spirochaeta pertenuis can be identified in old and new lesions. The disease is recurrent and contagious in all stages of development. Patients may be clinically but not serologically cured by a combined treatment of arsphenamine and a bismuth salicylate preparation, or acetarsone preparations, the doses of which are not clearly specified in the article. As long as the clinical cure is maintained without recurrences, there is no danger of contagion from the patients. In five of a group of nine patients who were given clinical tests, the Kahn and Meinicke reactions in the cerebrospinal fluid gave positive results, the amount of albumins and globulins in the fluid was increased and there was a syphilitic curve in the colloidal gold test. The Kahn test in the blood gave positive results in all cases. The author points out the importance of the combined arsphenamine and bismuth salicylate treatment. He advises watching discharged patients for possible recurrences in order to be sure they are no longer sources of contagion. In the group of 274 patients, 148 have obtained clinical cure from any of the treatments mentioned and have been discharged.

Archiv für klinische Chirurgie, Berlin

192: 1-244 (May 20) 1938. Partial Index

Osteomyelitis Following Wire Skeletal Traction. M. Biehl.—p. 1.

Experimental Studies on Origin of Neuropathic Arthropathies. M. Nozoe.—p. 29.

Study of Lymphatic Apparatus of Stomach and Duodenum in Its Relation to Peptic Ulcer. H. Engels.—p. 94.

Gastric Phlegmon. W. Stotz.—p. 134.

*Spilling of Ether in Peritoneal Cavity in Peritonitis. Margot Ducreux.—p. 169.

*False and Genuine Cryptorchidism. L. Moszkowicz.—p. 209.

Ether in Peritonitis.—Ducreux reports the results obtained with spilling ether into the peritoneal cavity in 122 cases of perforative peritonitis. In practically all the cases, operation was performed by Hosemann of Freiburg. A severe purulent spreading peritonitis was present in each case. Gonorrheal peritonitis and peritonitis of little girls were not included. One hundred and one cases were the result of perforative appendicitis; the other twenty-one were due to perforation of other viscera. Of the 101 cases of appendical peritonitis five proved fatal, a mortality of less than 5 per cent. In seventy-two of these cases in which removal of the appendix and spilling of the ether were done, only one was fatal. In the remaining twenty-nine cases, in addition to the introduction of ether, a primary enterostomy was made. There were four deaths. Among the 101 patients there were fifty-six males, five of whom died, and forty-five females, all of whom got well. There were thirty-nine children ranging in age from 3 to 15 years, all of whom recovered. The amount of ether introduced varied between 50 and 70 cc. in adults and from 10 to 30 cc. in children. The precautions to be used are a superficial anesthesia, termination of the Trendelenburg position before instilling ether, and drainage. A secondary enterostomy because of symptoms of ileus had to be performed eight times in the entire group of 122 patients. The complications were few. There were four instances of abscess in the pouch of Douglas, six hernias and one case of thrombosis of the leg. The author concludes that the spilling of ether into the peritoneal cavity in peritonitis diminishes mortality because of its favorable influence on the circulation, its stimulating influence on the intestinal tract and its effect on the infection. With the precautions suggested, overdosing is easily avoided. The method does not increase the incidence of adhesions and pulmonary complications.

Cryptorchidism.—According to Moszkowicz, the contradictions existing in the literature with regard to the genesis and treatment of cryptorchidism are due to the fact that under the term cryptorchidism are included a number of different conditions including cases of processus vaginalis which has failed to close, pathologic adiposity and failure of descent of the testes. The process, which likewise leads to the malposition of the testes. The origin of genuine cryptorchidism is explainable on the basis of abnormal manner in which male differentiation is preceded by a phase of female development in which there is formed a broad ligament which binds the two testicles together. This ligament

may be felt in genuine cryptorchides on the posterior surface of the urinary bladder as a thickening of the peritoneum. The author suggests that, in cases of an open inguinal canal, adiposity and failure of descent of the testicle, one should wait until puberty. Operation is indicated only in the presence of an inguinal hernia and then it should not be done too early. The testicular hypoplasia of the genuine cryptorchidism cannot be improved either by the operation or by endocrine treatment. It often contains strands of immature cells which exhibit a tendency to malignant degeneration (disgerminoma or blastoma of the intersexual). The removal of such a testicle when the condition is unilateral and the reposition of the testicle is difficult is a proper procedure. Under no circumstances should such a testicle be left within the peritoneal cavity because of the possibility of a formation of a blastoma. The potency and the libido are frequently diminished in cryptorchides. In some cases it is normal and may even be increased. Marriage is not necessarily excluded, but the partners should be informed as to the degenerative and hereditary character of the condition as well as to the fact that the marriage of cryptorchides is as a rule sterile.

Deutsches Archiv für klinische Medizin, Berlin

182: 145-260 (May 28) 1938. Partial Index

- Action of Vitamin C in Thyrotoxic Creatinuria. H. J. von Plehwe.—p. 145.
Pathogenesis of True Chlorosis. L. Heilmeyer.—p. 150.
Clinical Investigations on Action of Analeptics in Circulatory Insufficiency. J. Schlösser and H. Schwarz.—p. 176.
Hypertrophic Pulmonary Osteo-Arthropathy (Marie-Bamberger Disease). E. Stephan.—p. 183.
Observations on Action of S-Hydril (Stabilized Sodium Thiosulfate) in Plumbism. Frida Schmitt and H. Lossie.—p. 200.
Diagnosis of Congenital Deformities of Heart. (Open Ductus Arteriosus Botalli). W. Wilken.—p. 204.
Diabetes Mellitus and Heredity: Probability of Development of Diabetes Mellitus in Children of Diabetic Patients. F. Steiner.—p. 231.

Pathogenesis of Chlorosis.—Heilmeyer describes two cases of typical chlorosis in which the examination of the iron metabolism disclosed a great iron deficiency of the circulating blood plasma as well as a reversible disturbance in the resorption of iron. The author found that a number of factors must be present in order to produce the clinical picture of chlorosis. These factors are congenitally defective filling of the iron depots (chlorosis of the mother), increased iron consumption during the period of growth, menstrual loss of iron during the critical period of the iron metabolism at the end of the period of growth, food that is deficient in iron and vitamin, and a functional disturbance of the iron resorption, probably on the basis of a sympathetic neurosis, which is manifested in atony and ptosis of the stomach. The deficiency of iron in the food and the disturbance in the resorption of iron form a vicious circle.

Diabetes Mellitus and Heredity.—In order to determine the probability of the development of diabetes mellitus in the offspring of diabetic persons, Steiner studied 411 children who had a diabetic parent and compared the incidence of diabetes among these with the incidence of diabetes among 4,787 members of the families of persons applying for marriage loans, the latter being regarded as representing the average population. The incidence of diabetes was found to be much higher among the offspring of diabetic persons than among the general population. This indicates that a hereditary predisposition may play a part in the development of diabetes mellitus. However, it has not been determined as yet whether the diabetes mellitus always develops on the basis of a hereditary deficiency of the insular system or whether in some cases hereditary disturbances in the endocrine correlations or in the sympathetic nervous system might play a part. In the latter case the inherited functional capacity of the insular apparatus may be entirely normal. In this connection, the author directs attention to the frequent combination of diabetes mellitus with other disorders of the metabolism and of the endocrine glands. Moreover, general experiences indicate that metabolic disturbances other than diabetes mellitus, as well as endocrine disorders, have a greater than average incidence in the members of the families of diabetic patients. A connection between hereditary disturbances in the diencephalic region and diabetes mellitus seems

possible in view of the fact that an increased incidence of diabetes mellitus has been observed in the members of the families of patients with hereditary chorea.

Klinische Wochenschrift, Berlin

17: 833-864 (June 11) 1938. Partial Index

- Survival of Spirochetes of Syphilis in Lowest Temperature (-271.5°C . or 1.7°C . from Absolute Zero). F. Jahnel.—p. 836.
Is High Incidence of Tonsillectomies Justified? A. Lautenschläger.—p. 838.
Leukemia with Fluctuating Number of Leukocytes: Genesis of Leukemic Increase in Leukocytes of Blood. H. Kämmerer and M. Weisshaar.—p. 840.
Rennin. G. Hessel.—p. 843.
Casuistic Contribution to Cushing's Syndrome. K. Reinhertz and B. Schuler.—p. 849.
Meningitis in Nursling Caused by Meningococci and Bacillus Enteritidis Breslau. Also Contribution to Question of Pathogenic Characteristics of Breslau Bacilli. A. Welcker and H. Vogl.—p. 852.
*Quantitative Determination of Arsphenamine in Cerebrospinal Fluid with Aid of Pulfrich Photometer. H. Hüllstrung and J. Nordmeyer.—p. 854.

Arsphenamine in Cerebrospinal Fluid.—Hüllstrung and Nordmeyer have employed both Abelin's method and the Ehrlich-Berthelm reagent in attempts at the quantitative determination of arsphenamine. For this purpose they were usually combined with colorimetric procedures. All other methods for the determination of arsphenamine are indirect methods; they are based on the demonstration of the arsenic that is contained in the arsphenamine. Besides being complicated, these indirect methods are inexact and so the authors recommend the quantitative determination of arsphenamine by means of the Pulfrich photometer. To 3 cc. of the arsphenamine solution, which is to be examined and which is kept cooled in ice during the entire analysis, two drops of a 30 per cent solution of hydrochloric acid is added. After slight shaking, from two to three drops of a 0.5 per cent solution of sodium nitrite is added. The potassium iodide starch paper that is dipped into this solution shows a blue coloration, which may disappear again before diazotization is completed. After two or three minutes of waiting, the paper is dipped in again and, if blue coloration does not result, more drops of the sodium nitrite solution are added (two or three drops usually being sufficient) until blue coloration reappears. In the meantime, 0.3 Gm. of resorcin has been dissolved in 5 cc. of a 25 per cent solution of sodium hydroxide, and 1 cc. of this solution is then added to the ice-cooled mixture, while the tube is held slantwise. A red ring appears and, after shaking, the entire solution becomes red to rose-red. The intensity of the coloration and the absorption in the step photometer are dependent on the concentration. Since the solution is not stable, the photometry should be made within ten minutes. The authors further describe the technic, which employs the diazotization method. Both technics are for the cerebrospinal fluid; neither of them can be used for the determination of arsphenamine in the serum. Evaluating the quantitative determination of the arsphenamine in the cerebrospinal fluid, the authors say that it is helpful in answering many questions on the action and dosage of arsphenamine in neurosyphilitic and metasymphilitic diseases and on changes in the meningeal permeability for arsphenamine, following the use of auxiliary therapeutic measures.

Münchener medizinische Wochenschrift, Munich

85: 817-856 (June 3) 1938. Partial Index

- Treatment of Pulmonary Hemorrhage in Tuberculosis. F. Roll.—p. 821.
*Occurrence of Chlorosis in Male Subjects. W. Beckert.—p. 823.
Origin of Labor Pain and Its Significance for Management of Delivery. W. Wolf.—p. 824.
Treatment of Pain After Tonsillectomy. Gertrud Heddaeus.—p. 826.
New Therapeutic Principle in Idiopathic Trigeminal Neuralgia. O. Meyer.—p. 827.
Observations in Course of Epidemic of Scarlet Fever. O. Boyksen.—p. 828.

Chlorosis in Males.—Beckert says that most authorities are of the opinion that chlorosis is restricted to female patients, whereas some investigators have observed rare cases in male subjects. The author observed two youths aged 16 and 17 years who presented all symptoms of a chlorosis. Both patients had a hypochromic anemia without signs of increased destruc-

tion of blood and with normal gastric acidity. Pernicious anemia, anemia of hemolytic origin or achylic chloranemia could thus be excluded. A posthemorrhagic anemia could be excluded on the basis of the anamnestic clinical and roentgenologic data. In view of the microcytic and hypochromic character of the anemia and of the absence of infections and toxic factors a chlorosis seemed most probable, but the sex of the patients made this diagnosis rather doubtful. Nevertheless complaints about general weakness, fatigue, vertigo, headache and cold hands and feet were the same as in chlorosis of female patients. The clinical aspects were likewise those of a chlorosis. There were pallor, anemia with an unusually low color index, small size of erythrocytes, reduction of leukocytes, negative urobilinogen reaction in the urine and normal values of gastric acidity. The efficacy of iron therapy was a further corroboration of the diagnosis.

Zeitschrift f. menschl. Vererbungslehre, Berlin

21: 609-764 (May 21) 1938. Partial Index

"Sporadic" Deaf-Mutism as Prototype of Simple Recessive Mutation. E. Hanhart.—p. 609.

Studies on Families of Young Cancer Patients. Marie-Theres Schnorbusch and Brigitte Kujath.—p. 676.

*Heredity of Acute Articular Rheumatism (Studies on Seventy-Two Sets of Twins). O. Kaufmann and E. Scheerer.—p. 687.

Simultaneous Occurrence of Defects of Extremities and Osteosclerotic Systemic Disease. Leonore Liebenam.—p. 697.

Handwriting of Uniovular Twins. A. Legrün.—p. 704.

Right-Left Deviation in Handedness and in Personality: Research on Twins on Problem of Left Handedness. H. Bouterwek.—p. 737.

Heredity of Acute Articular Rheumatism.—In this investigation Kaufmann and Scheerer give their attention only to inflammatory rheumatism and disregard the degenerative rheumatic disorders. After directing attention to the fact that the familial occurrence of acute articular rheumatism has been reported repeatedly, they describe observations on a large material of twins. The records of 8,500 twins were investigated and in those of seventy-two sets of twins acute articular rheumatism was reported. The latter sets of twins were subjected to a careful study. The previous history was investigated and either the physicians in charge of the case were asked for a report or the twins were examined by the authors. Among twenty-seven sets of uniovular twins, concordance of acute articular rheumatism was observed five times, discordance twenty-two times. In the forty-five sets of binovular twins, concordance was observed only once. In view of the much higher incidence of concordance of acute articular rheumatism in sets of uniovular than in sets of binovular twins, the authors assume that hereditary factors have a part in the etiology of this disease.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

82: 2793-2956 (June 4) 1938. Partial Index

Periods of Luciani as Cause of Attack of Adams-Stokes: Connection Between Cheyne-Stokes Respiration and Adams-Stokes Attacks. C. L. C. Van Nieuwenhuizen.—p. 2801.

*Clinical Aspects of Acute Rheumatism: Hyperpyretic Rheumatism. P. H. Kramer.—p. 2808.

Pneumococcus Type III ("Mucosus") and Pneumococcus Type VIII in Acute Otitis Media. B. W. L. Siemens.—p. 2816.

Survey of Suicide Attempts with Fatal Outcome in Institutes for Mental Defectives in the Netherlands During Period from 1882 to 1932. N. Speijer.—p. 2824.

Dutch Midwives in Russia During Eighteenth Century. I. Van Esso Bzn.—p. 2831.

Hyperpyretic Rheumatism.—As the characteristic signs of acute rheumatic polyarthritides Kramer mentions scrofulous infections of various joints, the spreading to other joints, a tendency to cardiac infections (particularly endocarditis) and a prompt reaction of the articular processes to salicylates. However, special localizations of the virus or its toxins may give the disorder an entirely different aspect. The author describes two cases of hyperpyretic rheumatism. In discussing the diagnosis he emphasizes the following factors: 1. The high fever causes psychic disturbances which become manifest in restlessness, in anxiety and either in excessive talking or in being entirely uncommunicative. The patients also complain of headaches and insomnia. 2. Notwithstanding the high fever, the articular pains

decrease and may completely disappear. The swollen joints, which formerly were kept immobile, are now, during the restlessness, moved vigorously. 3. These patients have a dry, hot skin, because sweating often ceases entirely. Excessive secretion of urine may be the result of this. 4. Visual disturbances, speech disorders and visual and auditory hallucinations may become manifest soon after the first increase in temperature that leads to the fatal hyperpyretic rise. Many of these patients have a considerable euphoria and this, together with the improved movements of the joints, may mislead those who take care of the patient into thinking that he is improving, while in reality he is in grave danger. The physician, however, should recognize the serious condition as soon as the temperature rises to around 40 C. (104 F.). The author suggests that hyperpyretic rheumatism is a cerebral localization of the unknown rheumatic virus. It may develop during the first attack of acute rheumatism as well as during later attacks. It has been suggested that predisposing factors, such as misuse of alcohol, emotions and mental exertion, might play a part in the development of this cerebral form of rheumatism. The prognosis is largely determined by the rapidity of the development. In the most acute cases death follows rapidly. The same applies to the acute cases in which temperatures of 41.5 C. (106.7) are reached. However, in cases in which the temperature remains below these high figures, improvement is possible. The author thinks that energetic treatment with salicylates can prevent the hyperpyretic rheumatism. Moreover, together with the application of cold in various forms, salicylates are indicated in treatment.

Hospitalstidende, Copenhagen

81: 337-364 (April 12) 1937

Treatment of Most Important Carcinomas (Cancer of Breast, Stomach, Uterus and Rectum). J. V. Andersen.—p. 337.

*Primary Cancer of Lung and Liver Metastases. J. Hoffmeyer.—p. 352.

Simultaneous Carcinoma and Tuberculosis in Same Lung. G. Falkenbeth.—p. 357.

Cancer of Lung and Liver Metastases.—Hoffmeyer reports two cases of primary pulmonary cancer which presented nothing of special interest concerning the primary tumor, either macroscopically or microscopically, but showed a marked, presumably lymphogenic spread to the regional intrathoracic glands, particularly to the hilus glands and the bronchial glands but also to an almost unbroken chain of glands down to the diaphragm. Further, there were metastases to the glands about the upper part of the abdominal aorta and in the hilus of the liver. The only parenchymatous intra-abdominal metastases were seen in the liver and were numerous and large. The usual thorough routine examination disclosed no other metastases. The author considers hematogenic spread, although theoretically possible, improbable in both cases and the most reasonable explanation seems to him to be that on growth of the cancer into the normally hepatofugal lymph paths a retrograde spread occurs, from glandular metastases in the thorax or in the upper part of the abdomen, perhaps especially from the glands in the hepatic hilus. The manner of this retrograde lymphogenic metastasizing is unknown.

81: 465-492 (May 17) 1938

Studies on Calcium: Calcium Content in Cerebrospinal Fluid. K. G. Fuhrmann.—p. 465.

*Intestinal Invagination. (Observations Concerning Relation Between Clinical-Roentgenologic Picture and Treatment.) O. Povlsen.—p. 481.

Intestinal Invagination.—Povlsen describes the case of a child, aged 1 year, who in the course of about three and a half months had about fifty attacks of invagination. Roentgen examination during attacks showed that the intestine had an unusual tendency to spastic contractions; merely touching the child's abdomen could precipitate violent intestinal spasms. The author says that his observations and the results of experiments in animals show the importance of preventing spasms during attempts at disinvagination, partly by extremely conservative manual maneuvers in reposition. With bloodless reposition under roentgen control he emphasizes long-continued high enemas and the avoidance of measures which can disturb the patient or aggravate the local disorder or the patient's general condition.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 111, No. 6

COPYRIGHT, 1938, BY AMERICAN MEDICAL ASSOCIATION
CHICAGO, ILLINOIS

AUGUST 6, 1938

TREATMENT OF CARCINOMA OF THE BREAST

CHAIRMAN'S ADDRESS

HUGH H. TROUT, M.D.
ROANOKE, VA.

The treatment of carcinoma of the breast consists essentially of (1) the prevention, if possible, of its occurrence, (2) the removal of the malignant growth from the chest wall in such a manner that local recurrences will be decreased or altogether eliminated, and (3) the proper handling of the patient after the carcinoma has extended beyond the chest wall.

PROPHYLAXIS

As the cause of cancer is unknown, a discussion of its prevention must necessarily deal with unknown factors. However, a close observation of more than 500 cases of carcinoma of the breast during a quarter of a century does yield some suggestions. While these suggestions might not be helpful in preventing carcinoma, they at least may be applied to add to the well being of the patient.

Patients with painful breasts associated with menstruation often obtain relief from the hypodermic employment of an estrogenic substance started a few days before the expected menstrual period. Often one sees these painful breasts associated with bilateral cystic mastitis. Here also the swelling, as well as the pain, frequently disappears following the hypodermic administration of the proper estrogenic substance such as theelin or prolactin.

While many articles have been written on the possible association of chronic cystic mastitis and carcinoma of the breast, I do not feel that there is any definitely proved evidence of such an etiologic relationship. Before any such connection can be determined there will necessarily have to be a more definite and generally accepted definition of what constitutes a case of "chronic cystic mastitis." Some pathologists report chronic cystic changes of the breast to be present in practically all postmortem examinations. It would be helpful in the proper consideration of the treatment of chronic cystic mastitis were one able to differentiate clinically between "mazoplasia," a term denoting a physiologic aberration of the breast which usually develops normally at the menopause, and "mastopathy," a name indicating a desquamative epithelial hyperplasia. It is possible that the latter condition might be the beginning of an early

carcinoma of the breast. Anyhow, every case of painful chronic cystic mastitis, especially if there is an increase in the size of the enlargement, should be carefully watched. If the condition does not yield to the administration of estrogen and proper support of the breast, serious consideration should be given to amputation of the breast with immediate microscopic examination. This is especially important if the trouble is unilateral.

A properly fitting brassière which supports the pendulous breast by suspending it from the shoulder often relieves the pain, especially if the pain is in the upper outer quadrant. As carcinoma of the breast is most frequently found in this quadrant, it is at least suggestive that the chronic irritation produced by repeated trauma while the patient is walking might have some association. Anyhow, the relief from pain after a correct support is worn compensates for the effort spent in obtaining a proper type of brassière. The one I have found most frequently satisfactory has the elastic and supporting straps crossed in the back with an adjuster which allows the patient to regulate the amount of support required to give relief from pain.

LACTATION

Perhaps some valuable lessons can be obtained from observing the incidence of malignancy in the various animals. For example, carcinoma of the udder of the milk cow is practically unknown, while a malignant growth in the breast of a dog is quite frequent. In the former lactation is encouraged, while in the latter it is curtailed. Many authors, in writing on this subject, express the opinion that the retained products of lactation play a definite role in the etiology of carcinoma of the breast. Certainly it is wise to pay more attention to the duration of lactation than is usually given to this subject by young mothers. The foreign born wives of miners who nurse their babies for long periods have a very much lower incidence of cancer of the breast than the American born wives who nurse their babies for a shorter period. This fact is worthy of serious consideration.

A patient from whom a carcinoma of the breast has been removed should not be subjected to the possibility of lactation in the remaining breast for fear of reactivation of the malignant condition.

In 1921 Kilgore¹ reported the incidence of cancer in the second breast. In 1922 I² reported two cases of malignancy developing in the remaining breast after a radical operation on the primary lesion. At that time

1. Kilgore, A. R.: The Incidence of Cancer in the Second Breast, *J. A. M. A.* 77:454 (Aug. 6) 1921.

2. Trout, H. H.: The Remaining Breast After Radical Removal of the Opposite Side for Carcinoma, *Surg., Gynec. & Obst.* 34:630-632 (May) 1922.

I collected thirteen other such catastrophes by correspondence with surgical friends. In 1937 Harrington³ analyzed the effect of lactation on the remaining breast and showed that, "if pregnancy does develop subsequent to radical amputation, the patient may give birth to babies at full term and that metastatic malignancy may not develop as a consequence." In the Mayo Clinic series of fifty-five women who became pregnant after operation for carcinoma of the breast it is illuminating to notice that the majority of younger women did not have involved glands in the axilla at the time of operation; also that a relatively large number of these cases, judged by Broder's histologic classification, were grades 1 and 2. These observations differ from my experience, for in mine the younger the patient apparently the more active the malignant condition. However, Harrington states, "we shall continue to advise young women who are in the child-bearing period of life not to have subsequent pregnancies."

EDUCATION

It is difficult to evaluate properly the effects of education concerning cancer. I myself feel that education has been of great benefit. However, the creation of "cancerphobia" should be given serious consideration. For example, in my series of cases the longest interval of time between the occasion when the lump in the breast was first discovered and the doctor consulted was found in the group of patients who were doctors' wives.

HEREDITY

Of course, the fact is now generally accepted that inheritance is a definite factor in the etiology of cancer, but naturally we cannot control the "selective affinity" in human beings as we usually can with other domesticated animals. Perhaps the most conclusive evidence of the association of heredity and malignancy is to be found in the studies concerning identical twins, not only in animals but more particularly in human beings.

TREATMENT

It is a great pity that so much has been written concerning the relative advantages of surgery and irradiation in the treatment of carcinoma of the breast. Instead of being regarded as rivals these two agencies should be combined, provided this can be done without injury to the patient. Much harm can be done by ill advised and improperly executed surgery, as well as by unreasonable and dangerous irradiation. If the patient is to receive the greatest benefit there must be closer teamwork between the surgical departments and the departments of radiology than now exists in many localities. Not only does this apply to the type of combined treatment but, in these times of so much discussion of the high cost of medical care, careful consideration should be given to the combined costs of such treatments to the patient.

It is hoped that the new x-ray tube arrangement described recently by Failla⁴ of the Memorial Hospital, New York, will help lessen the cost of proper radiation therapy as well as extend the field of its accessibility. Certainly the surgeon while estimating his bill should not forget that the patient has about an even chance of having further depletions of her financial resources owing to the fact that we are unable to obtain much

over 50 per cent of five year "cures" in this disease. There will never be a wide adaptation of irradiation and surgery in the treatment of carcinoma of the breast until there is an arrangement by which the patient will know fairly accurately the total cost for the combined forms of treatment. It is even far more important that full, frank and frequent consultations be held between the surgeons and the radiologists during the progress of the treatment. If these cannot be arranged it will probably be better for the patient if the surgeon continues to do only surgery and the radiologist to depend entirely on irradiation, for half-hearted cooperation leads only to the discredit of both forms of treatment and often injures the patient.

Every patient with carcinoma of the breast should have not only a proper examination made of her physical condition and the extent of the disease but a careful estimate made of her mental ability and willingness to cooperate in the treatment over a long period of time.

PREOPERATIVE IRRADIATION

In general, I feel that preoperative irradiation should be given in each case, provided this can be done without any injury to the patient. If the patient is a young woman with an actively enlarging malignant growth I feel that intensive preoperative irradiation is imperative. I have seen many such cases in which the activity of the malignant condition and its associated infection were apparently decreased and a condition of questionable operability converted in several weeks into a safe, sane and operable risk.

Coutard⁵ states that it would be rational to irradiate first and operate later, because there is very frequently an association of young and adult cells. This would give the surgeon added security in his operation. "The surgical intervention could be accomplished before the possible appearance of new, young cells, that is to say, before the twentieth day, and in any case before the slight skin reaction of the twenty-fifth day." Radiologists believe that the beneficial effects of irradiation are dual in character: (a) by the direct action on the cancer cell itself and (b) by confining the activity of the malignant condition by means of developing fibrosclerotic connective tissue around it, and such a defense also diminishes the nutrition to the cancer cells, which often results in the death of such isolated cells. A thorough comprehension of this attitude will aid in the selection of the proper time for operation when the consultation takes place between the surgeon and the radiologist. I have also seen these patients first improve under irradiation and then refuse operation, hoping for continuation of improvement previously obtained, only to return for the contemplated operation at a time when the malignant growth has extended far beyond the help of surgery and irradiation. This type of case illustrates what I mean by insisting on the estimate of the patient's mental ability to cooperate for a long period.

Pfahler⁶ has recently described a form of treatment which requires only forty-eight hours before operation. This treatment does not injure the skin. I believe this treatment, whenever it is possible, should be given to every patient who absolutely refuses the longer period of treatment usually advocated by radiologists.

There are some patients who become so panicky when told that they have a cancer that an almost immediate

5. Coutard, Henri: The Results and Methods of Treatment of Cancer by Radiation, *Ann. Surg.* 106: 584 (Oct.) 1937.
6. Pfahler, G. E.: The Treatment of Carcinoma of the Breast, *Am. J. Roentgenol.* 39: 1-18 (Jan.) 1938.

3. Harrington, S. W.: Carcinoma of the Breast, *Ann. Surg.* 106: 690 (Oct.) 1937.

4. Failla, G.: A New X-Ray Tube Arrangement, *Science* 87: 10 (May 6) 1938.

operation is required. It is reasonable to presume that preoperative irradiation makes any young active and unattached cancer cells at least somewhat dormant and thereby less apt to be transplanted by any undue manipulation during the operation. On the other hand, I have seen a few cases in which the skin has been so badly burned by improperly given preoperative irradiation that operation could not be successfully undertaken in the field. Naturally, there should be some distinct agreement between the surgeon and the radiologist as to the condition of the skin after preoperative irradiation. However, the type and extent of the irradiation, whether the Coutard, Pfahler or any other method, must be decided by the radiologist just as much as the type and extent of the operation must be the duty of the surgeon. The selection of the individual case for preoperative irradiation is the combined duty of the surgeon and the radiologist after a thorough and separate study by the two.

At the present time the advisability of the employment of preoperative irradiation is an unsettled question. Many surgeons and radiologists believe there is a chance of the growth extending during the weeks required for some method of such treatment. Certainly if there is not a regression of the growth in several weeks the operation should not be deferred longer. Certainly carcinoma of the breast requires an even more careful individual selection of the proper form and time of treatment than is usually necessary in other diseases.

The removal of the malignant growth from the chest wall, in my opinion, can be more accurately and certainly done by the radical excision in block dissection than by any one other method. All the tissue wide of the growth that it is possible to remove without interfering too much with the well being of the patient should be excised.

One of the great dangers of employing irradiation in conjunction with surgery for carcinoma of the breast is the temptation to the surgeon not to do as thorough an operation as he should do, feeling that if he is not quite as radical as the seriousness of the condition demands the irradiation will compensate for his dereliction. I know from my own personal experience that this is a real danger and not a theoretical supposition.

The type of operation I have employed in all my cases is that described by the late Prof. W. S. Halsted.⁷ I have tried to follow his teachings with very few modifications over all these years. In cases in which the diagnosis is doubtful I obtain my specimen for microscopic examination by the employment of the cautery, so as to lessen the chances of contamination. "Punch biopsies" in my hands have not been as satisfactory as large specimens obtained with the cautery.

If examination of the specimen demonstrates that the growth is malignant, the field of operation is recleaned after a sponge has been sewed over the incision from which the specimen has been removed. This, of course, is done to preclude the possibility of contamination of the operative field with any possible stray cancer cells. I employ very fine black silk because I believe that this material is far more satisfactory than catgut, and I know that its employment necessitates meticulous care and a high regard for tissue, which is so essential for the proper healing of wounds.

The incisions of the skin go wide of the malignant growth, and this in spite of the fact that since I have been employing irradiation in conjunction with surgery I have not had a recurrence of the carcinoma in the scar. This method might be regarded by some surgeons as being illogical, but I feel that carcinoma of the breast is such a treacherous invader that no one has a right to relax his vigilance in the slightest degree against the extension of the malignant condition. Dr. Halsted remarked that the surgeon who made the incisions for carcinoma of the breast should not be the one to close them, for fear he might encroach too closely on the malignant growth in hope of an easier closure by so doing.

It is interesting also to recall the observation of Hintze⁸ relative to the direct invasion of the pectoral and intercostal muscles by malignant growth, while metastases in distant muscle structures are practically unknown. Hintze further states that "the direct spread may be compared to the advance of an army which overcomes all obstacles in its way, while the distant metastases occur as vessel emboli of which thousands perish before one successfully starts growing. This constant throwing out of pieces of tumor tissue with their resulting decomposition produces a protein reaction which is the cause of the cachexia." The patient, therefore, does not die from the metastases which he has but rather from the metastases he does not have, as they constitute the cause of the foreign protein reaction.

While I have had no recurrences of the carcinoma in the scar since using irradiation, I have had a continuation of the malignant growth when at operation the carcinoma was shown to extend through the intercostal spaces. In other words, the irradiation of the chest wall cannot be allowed to penetrate very deeply for fear of causing great damage to the lungs. Reichert⁹ injected india ink into the lymphatics under the skin and was "amazed to see the number of lymphatics that lie beneath the skin which are so close to the derma that they cannot be removed when making skin flaps. Therefore, unless one takes a large amount of skin, one does not include those lymphatics."

Just before tying the final skin stitches, I place 50 mg. of radium, properly screened, in the axilla. This is so placed that there is a cigaret drain between the radium and the large vessels. This 50 mg. of radium and the drain are both brought out through the same stab incision in the midaxillary line. It is interesting to recall that Mr. Geoffrey Keynes¹⁰ never dissects out the glands of the axilla but depends entirely on interstitial radium treatment. I have had a fairly large percentage of patients from whom I have removed definitely involved malignant glands from the axilla, and they have remained free from any sign of the disease for more than five years. I did not have such results before using radium in the axilla when the glands were malignant. However, I cannot fully agree with Mr. Keynes when he writes: "It may be stated at once that close observation of the patients over many years has shown that the results on the axillary nodes have been uniformly good. They have been made to disappear almost with a certainty, and they have not recurred."

8. Hintze, A.: The Occurrence and Prevention of Metastases from Carcinoma of the Breast, 61. Tag d. deutsche Gesellsch. f. Chir., Berlin, 1937.

9. Reichert, F. L., in discussion on Cancer Surgery, Ann. Surg. 106: 685 (Oct.) 1937.

10. Keynes, Geoffrey: The Place of Radium in the Treatment of Cancer of the Breast, Ann. Surg. 106: 619 (Oct.) 1937.

7. Halsted, W. S.: Results of Operations for Cure of Cancer of Breast Performed at Johns Hopkins Hospital from June 1889 to January 1894, Ann. Surg. 46: 1, 1907.

Apparently one, or possibly two, large malignant glands in the axilla give a far better prognosis than numerous small shotlike malignant glands in the axilla. In other words, the large glands seem to be an indication of a better defense.

Another 50 mg. of radium is placed in the region supplied by the internal mammary vessels. This is distributed in a rubber tube about 18 inches long. Four capsules of radium each having 12.5 mg. are placed in this rubber tube. They are placed about 2 inches apart and the tube is tied tight in between each radium capsule.

The radium is allowed to remain under the skin for from thirty-six to forty-eight hours, depending on the condition found at operation and on the rapidity of the growth. Of course, if the malignant condition has been found at operation to have invaded any other locality on the chest wall, the radium is placed at such a site. Skin that is stretched tightly across the chest and heals under tension produces far more discomfort in breathing and limitation of motion of the arm than is occasioned in cases in which grafts are employed and the skin is loose on both sides of the graft.

It is my practice to wash out the field of operation with about 1,500 to 2,000 cc. of hot physiologic solution of sodium chloride. This washes out any small blood clots and theoretically at least some loose cancer cells that might otherwise be allowed to remain. It is also possible that the heat might kill any stray cancer cells which might have escaped into the operative field. The incisions, as well as the grafts, are covered with silver foil, which I have found allows any secretion that might be present to come through and thereby keeps the incision dry. This is a very comfortable dressing to the patient, because if it becomes necessary to change the outside dressing one can do it without pulling on the stitches or otherwise disturbing the incision or the graft. The silver foil also has some slight antiseptic value and is nonirritating.

Patients are encouraged to use their arms early. Also care should be taken not to lift the patient up by the arm while the field of operation is being prepared. A hand pushed under the shoulder is easier and safer. I have seen a temporary brachial paralysis resulting from "lifting by the arm" in a few cases. About two weeks after operation the patient is turned over to the radiologist for a series of postoperative radiation treatments. Such treatments usually require about another two weeks. The time consumed by the series of treatments is dependent on the patient's reactions to irradiation. Some of my patients were considerably nauseated until the radiologists learned to "test them out" by giving small doses of high voltage roentgen treatment at the beginning of the series and thereby determining what doses the patient could stand without nausea. It has been my experience that if irradiation is given over skin grafts which are less than ten days old the grafts are sometimes killed. If such exposure is given after two weeks I have not noticed any damage to the grafts.

The true value of irradiation of the ovaries is as yet uncertain, but it is my practice to give such treatments. If the patient is at the age when she is still menstruating, the symptoms of an artificial menopause and the uncertainty of the advantages of sterilization by irradiation are explained to her, and if she has no very marked objection such treatment is given. After a

radical operation for the primary lesion, the frequency with which carcinoma develops in the remaining breast when the patient becomes pregnant and the remaining breast begins to lactate is an additional reason to sterilize such comparatively young patients by irradiation of the ovaries. If the patient has passed the menopause, postoperative irradiation of the ovaries is done regardless of the fact that these patients have ceased to menstruate. Ahlbrom¹¹ of Stockholm, who has been irradiating the ovaries in all women with carcinoma of the breast since 1930, feels that his results justify the continuation of this practice. Many other authors also believe that this is important. They point out that most carcinomas of the breast start after the menopause, and they reason that the ovaries might release some carcinogenic substance more readily after they have ceased to control the menses than they did while actively engaged in the regulation of menstruation. It is possible that in the near future a chemical study of the blood for carcinogenic substances will give the answer to this. However, at the present time I feel that irradiation of the ovaries in patients past the menopause does not do any harm, might do some good, and therefore should be done. We have all seen some remarkable regression of both the breast cancer and the metastases following irradiation of the ovaries in young women, however, and in this class of cases such therapy should certainly be employed. I shall continue to irradiate the ovaries in both the young and the old—at least until some of the unsolved hormone relationships are solved.

Of course, if a physical examination of the patient demonstrates that the malignant condition has extended far beyond the chest wall, an extensive operation should not be considered. Occasionally one obtains mental but temporary relief by the simple removal of a foul smelling ulcerating breast, followed by irradiation. Frequently the pain of bone metastases is relieved by high voltage roentgen therapy, but I have never seen a case in which I thought the progress of the disease was slowed, and certainly none in which the malignant condition was "cured."

SUMMARY

I feel that the successful treatment of carcinoma of the breast is to be found primarily in the radical removal of the malignant growth from the chest wall by a competent surgeon, but this should be fortified with the aid of an intelligent and well equipped radiologist.

1301 Franklin Road.

11. Ahlbrom, H.: Castration by Roentgen Rays as Auxiliary Treatment in Radiotherapy of Cancer Mammæ at Radiumhemmet, Stockholm. *Acta radiol.* 11: 614-633, 1930.

The Architectural Possibilities of Proteins.—It can be shown mathematically that the number of possible isometric proteins containing a single molecule of each of the twenty-two natural amino acids, combined by the familiar peptid linkage, amounts to the incredible figure of 39×10^{25} . When one recalls that proteins are not composed of single molecules of the individual amino acids but contain many molecules of each kind and that several methods of union, instead of one, may be employed in their synthesis, the number of architectural possibilities is seen to be infinite. Thus the unerring accuracy with which specific proteins are manufactured, in each tissue and organ, out of the variable mixture of amino acids circulating in the blood is one of the most astounding attributes of living things.—Rose, William C.: *The Physiology of Amino Acid Metabolism*, *Proc. Inst. Med. Chicago* 12:98 (April 15) 1933.

INFANTILE CEREBRAL PALSY
(SPASTIC PARALYSIS)

A DISCUSSION ON THE ETIOLOGY

CLARENCE H. HEYMAN, M.D.

Senior Clinical Instructor of Orthopedic Surgery, Western
Reserve University School of Medicine
CLEVELAND

This paper is based on the observations of an orthopedic surgeon on approximately 1,000 children with cerebral spastic paralysis. A large portion of these children sought treatment at the Gates Hospital for Crippled Children at Elyria, Ohio. No pathologic study has been made, but impressions have been formed out of this material of clinical observations and inquiry into the history preceding birth and the history of birth and early infancy history that there are many diseases which give rise to the clinical picture of spastic paralysis. Accordingly a rather extensive study of the literature was made pertaining to etiology, and this has in a great degree substantiated these impressions. My purpose in this paper will have been accomplished if I succeed in amending the prevailing opinion among physicians that spastic paralysis is necessarily caused by obstetric difficulty or birth trauma. While the importance of birth trauma as an etiologic factor is accepted, it has occupied an unwarranted prominence in the teaching of students and in the minds of the public. To clarify our knowledge is no easy task. The essential point is to examine what definite facts are available, consider the doubtful points and frankly admit our ignorance on many questions.

Great confusion exists as to what constitutes Little's disease. Strictly speaking, from Little's description the term should be confined to diplegia that is associated with difficult or abnormal birth. Actually it is used to include every variety of cerebral palsy present from the time of birth. There are great variations in the symptoms of the cerebral palsies, and it is difficult to accept Little's disease as a definite and distinct clinical entity. In this country physicians do not look on the case of spastic hemiplegia as being Little's disease, and the mild case of paraplegia in which there is normal mentality and which is not associated with difficult labor or premature birth is not so considered. From these there are gradations of increasing severity with no sharp line of demarcation leading up to the diplegias with deficient mentality and severe contractures which are considered as typical of Little's disease. Where can the line be drawn? It seems, therefore, that the term infantile cerebral palsy is preferable to that of Little's disease.

Hemiplegia is to be distinguished from paraplegia both clinically and pathologically. Some writers use the term "double hemiplegia," apparently having reference to diplegia or quadriplegia. The use of the term double hemiplegia is not justified in my experience. The typical case of spastic hemiplegia presents at least some degree of spasticity in the muscles of the forearm, particularly of the pronator muscles, and in more severe cases a rigidity of the flexor muscles of the wrist and fingers. In fact, spasticity of the muscles of the upper extremity is often more marked than in the lower. I recall having seen only one case of diplegia in which there was present any appreciable degree of rigidity of both the pronators and the flexors of the wrist and

fingers. On the other hand, this is the usual condition in cases of hemiplegia. It follows then that birth trauma, which likely plays a major role in the etiology of hemiplegia, is not necessarily a factor in diplegia. The disturbance of muscle function in the upper extremities in diplegia does not lead to contractures, which are common in hemiplegia; it is rather the result of loss of muscle control, athetosis, mass reaction and incoordination.

In order to discuss in an orderly fashion the various conditions that have been regarded as etiologic factors in the production of the infantile cerebral palsies, the classification proposed by Hutinel and Babonneix¹ is accepted.

CAUSES OPERATING BEFORE CONCEPTION

1. *Toxins*.—According to Hutinel and Babonneix the only toxic cause the role of which is well established is alcoholism. They cite Cessen, who noted this factor in seven of his cases and attributes to it an influence as great as that of syphilis.

2. *Infections*.—The only infection worth mentioning is syphilis, although Sachs and Hausman² believe that it plays an unimportant role. The infantile cerebral palsies are observed particularly in premature infants, and it is a well known fact that syphilis is one of the more important causes of premature birth. Marfan³ reported two cases of spastic paraplegia due to hereditary syphilis appearing after the patient was 4 years of age in which a marked improvement was made after antisiphilitic treatment. Warner⁴ reported a case of spastic diplegia with mental retardation due to congenital syphilis. Symptoms did not appear until the child was 3 years old. Examination of the blood and spinal fluid was positive. Roger and Smadja⁵ reported Little's disease in two sisters who were born prematurely and who had congenital syphilis. Spasticity was present from the time of birth. Hutinel and Babonneix quote numerous writers and come to the conclusion that "hereditary syphilis occupies an important place in the etiology of congenital rigidity, whether it be of the first or, more often, of the second generation."

3. *Neuropathic Heredity*.—This likely is an occasional factor, for on such a basis appears to be the explanation of familial or hereditary spastic paralysis. This was first observed by Strümpell,⁶ who classified the cases in two groups. In one the disease begins between the ages of 20 and 30 years, and in the other it begins between the ages of 3 and 6 years or somewhat later. In 1916 Rhein⁷ published a complete bibliography and reviewed the thirty-five cases that had been reported up to that time. He found that pathologic heredity, such as insanity, alcoholism, deaf mutism, syphilis, neurosis and epilepsy appeared in a large percentage of cases. In a number of cases symptoms fol-

1. Hutinel, V., and Babonneix, L.: La maladie de Little: étiologie, pathogénie et anatomie pathologique, *Ann. de méd. et chir.* 15: 625-656, 1911.

2. Sachs, Bernard, and Hausman, Louis: *Nervous and Mental Disorders from Birth Through Adolescence*, New York, Paul B. Hoeber, 1926.

3. Marfan, A. B.: Spasmodic Paraplegia Due to Hereditary Syphilis in Children, *Arch. de méd. d. enf.* 16: 561-576, 1913.

4. Warner, E. C.: A Case of Spastic Diplegia with Mental Deterioration Due to Congenital Syphilis, *Guy's Hosp. Rep.* 70: 345-346 (July) 1929.

5. Roger and Smadja: Little's Syndrome Predominating in the Medulla in Two Sisters Who Were Premature and Who Had Hereditary Syphilis, *Marseille méd.* 58: 1118-1128, 1921.

6. Strümpell, Adolf: Die primäre Seitenstrangketerose (spastische Spinalparalyse), *Deutsche Ztschr. f. Nervenh.* 27: 291-339, 1904.

7. Rhein, J. H. W.: Family Spastic Paralysis, *J. Nerv. & Ment. Dis.* 44: 115-144 (Aug.), 224-243 (Sept.) 1916.

lowed an infectious disease. The pathology is obscure, and our knowledge depends largely on clinical studies. In 1909 Punton⁸ reported seven cases in two families. He believed the disease to be a separate distinct clinical entity. More recently Williams,⁹ Litvak,¹⁰ Piatnitzky,¹¹ and Babonneix and Lance¹² have reported cases. Powdermaker¹³ believes the cause is likely to lie in some unknown intra-uterine or constitutional condition existing during pregnancy or in a defect of the germ plasm.

4. *Consanguinity*.—The role of consanguinity has been described by several writers, but the evidence is not conclusive. Certainly it is not an important factor.

CAUSES OPERATING DURING PREGNANCY

1. *Intoxications*.—In the presence of intoxication of pregnancy, premature birth is often spontaneous or induced. Two hypotheses are offered: (a) the intoxication facilitates the harmful effects of birth before term on the brain of the newborn infant by making the blood vessels so fragile that they rupture on the slightest traumatism; (b) the intoxications of pregnancy are responsible both for the premature birth and for a degeneration of nerve cells of the brain. The nerve lesions and the premature birth are simultaneous, although independent, effects of the same pathogenic cause.

2. *Primary Degeneration*.—According to Collier,¹⁴ Freud argued the cause of a primary neurogenic degeneration which might be incident at any period of fetal life or childhood. The only cerebral paralysis that results from difficult birth occurs when the brain is lacerated, and this takes the form of a monoplegia or hemiplegia or, rarely, of a double hemiplegia. Anatomically this type of lesion is entirely different from the conditions found in the brain in diplegia.

Collier excludes abnormalities of birth as a causal factor and places them as clinical associates of diplegia or as something wrong with those mysterious relations between mother and offspring which determines a speedy delivery at full term. He cannot refer one and the same pathologic condition to widely different causes such as premature, precipitate and prolonged birth and asphyxia. The lesion is found only in the brain, and he deduces from pathologic material that the neuroblasts may fail to develop just as a frost may influence germination of seeds. Some develop and some do not. He does not know the nature of this frost, except in syphilitic infections of the brain. The frost causes a premature birth, and the cause is a primary neurogenic degeneration with arrest of development. Gross lesions are rarely found.

Patten¹⁵ reached conclusions similar to those of Freud and Collier. He divided his cases of cerebral diplegia into two groups: those in which labor is difficult and those in which labor is normal. He concluded

that the occurrence of bilateral motor involvement together with a defect in intelligence indicates something more than the effects of trauma or vascular accidents and that there exists probably a developmental defect or arrest which concerns either the integrity of the cortical cells or the proper myelinization of the corticospinal tracts and association fibers.

3. *Gross Developmental Defects*.—It is recognized that congenital rigidity with deficient mentality is associated with macroscopic maldevelopment of the brain. These lesions are usually symmetrical and consist of cortical atrophy, porencephaly, tuberous sclerosis, microcephaly and vascular lesions resulting in softening or cysts.

4. *Other Causes During Pregnancy*.—These are not important, with the exception of syphilis. Emotional disturbances, maternal traumatism, repeated pregnancies and uterine neoplasms have been mentioned as causal factors in a few cases, but the evidence is not conclusive.

CAUSES OPERATING AT THE TIME OF DELIVERY

1. *Premature Birth*.—In order to understand the mode of action by which premature birth is said to cause cerebral palsy it is necessary to consider the development of the pyramidal tracts. The axis cylinders of the corticospinal tracts in a seven months fetus have descended only to a level of the bulb. During the ninth month they reach the lumbar region. Thus at birth before term the pyramidal tract has not attained its complete development. This is independent of any organic lesion. According to Pierre Marie and Brissaud¹⁶ the pyramidal tract develops normally in intra-uterine life but in extra-uterine life it requires months to develop, and then never develops perfectly. They claim, therefore, that in birth before term the pyramidal tracts cannot exercise their regulatory influence on muscle tonus. By the same theory they also explain the distribution of the spastic muscles. Thus, when an infant is born at six months and the tracts have not developed beyond the bulb, a diplegia occurs; if it is born between the eighth and ninth months the tracts have extended to the cervical region, and only the lower extremities are affected, resulting in a paraplegia. They considered prematurity the essential cause of Little's disease. This theory is open to many objections. Chief among these are the well known facts that in the immense majority of prematurely born infants Little's disease does not develop and that the majority of persons with Little's disease were not born prematurely. Therefore, one may conclude that spastic diplegia, or so-called Little's disease, is not inseparably connected with premature birth.

While the theory is subject to grave objections, the arguments on which it is based must not all necessarily be rejected. Premature birth is present too often in the history of these patients to be considered as due simply to chance. Two conclusions are then possible: (a) the intoxications of pregnancy and premature birth combine in producing the condition—the former plays the role of the predisposing cause, the latter that of the determining factor (Little); (b) the condition which produces faulty development of the pyramidal tract also causes the premature birth (Freud). Collier

16. Cited by Hutinel and Babonneix.¹

8. Punton, John: Hereditary Spastic Paraplegia: Report of Seven Cases in Two Families, *J. Nerv. & Ment. Dis.* 36: 588-600, 1909.

9. Williams, G. H.: Family Spastic Paralysis, *J. Nerv. & Ment. Dis.* 47: 427 (June) 1918.

10. Litvak, L. B.: The Problem of Familial Spastic Diplegia, *Sovrem. psikhonevrolog.* 8: 373-378 (April-May) 1929.

11. Piatnitzky, N. M.: Clinical Symptoms of Spastic Familial Paralysis, *Klin. med.* 9: 566-568 (No. 14) 1931.

12. Babonneix, L., and Lance, M.: Diplegia spasmodique familiale, *Gaz. d. hôp.* 103: 921 (June 25) 1930.

13. Powdermaker, Florence: Familial Congenital Spastic Diplegia: Report of Three Cases in One Family, *Am. J. Dis. Child.* 39: 148-156 (Jan.) 1930.

14. Collier, James: Pathogenesis of Cerebral Diplegia, *Brain* 47: 1-21 (Feb.) 1924; Pathogenesis of Cerebral Diplegia, *Lancet* 2: 1129-1132 (Nov. 24) 1923.

15. Patten, C. A.: Cerebral Birth Conditions with Special Reference to Cerebral Diplegia, *Arch. Neurol. & Psychiat.* 25: 453-468 (March) 1931.

explains the theory of Freud, who distinguished between a bilateral symmetrical lesion and a hemiplegia, by the opinion that all diplegias really have their pathologic origin long before birth. "Premature, precipitate and difficult birth are not causal factors in the production of diplegia; they are only associated symptoms of deeper-lying influences which have dominated the development of the fetus or organism of the mother."

It appears, then, to be the opinion of contemporary writers that only in a few exceptional instances is premature birth alone capable of causing cerebral palsy. Usually other pathologic influences are associated with it which are responsible for both the prematurity and the congenital rigidity. It is necessary to distinguish spontaneous premature delivery, which is usually the result of toxic infections of pregnancy, from induced premature delivery, which does not favor the development of cerebral disturbances.

2. Difficult Delivery at Term.—Various modes of action are present during difficult delivery. These are described as being due to hemorrhage, thrombosis, asphyxia or anoxemia.

Little¹⁷ in 1843 suggested that difficult labor might be an etiologic factor but that lack of development of cerebral tissues and meningeal inflammatory processes were the usual causes. In a second paper in 1862 he¹⁸ stated that three fourths of all cases were caused by an intracranial hemorrhage at the time of birth. In 1885 Dr. Darah McNutt wrote a thesis on the subject and described the pathologic condition in a case of double infantile hemiplegia in a child born with instrumental delivery. She described a second case of a child who died when 22 days old. At necropsy the right hemisphere was found covered with a clot which had extended toward the lateral ventricle. She said "It is legitimate to conclude that had this second child lived it would have developed by cicatrization the shrinkage of the central convolutions and the converging of the neighboring gyri which was found in her first case and which characterize the most marked cases of diplegia."¹⁹ She then generalized meningeal hemorrhage as the universal cause of spastic states dating from the time of birth and associated with difficult labor. This opinion has gained wide acceptance and is still accepted by Sachs.² In spite of the excellence of her work, many writers believe that she misinterpreted her observations. This is maintained by Collier,¹⁴ Freedom²⁰ and others.

The importance of meningeal hemorrhage is emphasized by many contemporary writers, chiefly Sachs,² Sharpe,²¹ Ehrenfest,²² Kearney,²³ Ford, Crothers and Putnam²⁴ and others. It is denied by Collier, Freedom,

Merwarth²⁵ and others. It is well known, of course, that a large number of babies die as a result of intracranial hemorrhage. The lesions have been described as a single massive hemorrhage or of the petechial type. Ehrenfest states that retinal hemorrhages are discovered within the first twenty-four hours in probably more than 12 per cent of infants. Smaller and larger hemorrhages in the substance of the brain, outside the fairly common pial and tentorial hemorrhages, are found at autopsy in about 65 per cent of all young infants. Lacerations in various dural folds are revealed in about 50 per cent at autopsies in such cases. He therefore concludes that these facts must convince one of the evidences of some sort of traumatism of the central nervous system. He attributes molding and altered uneven distribution of the blood within the cranium as the two phases of labor that exert the most noteworthy mechanical effect on the brain and meninges. Sharpe, in numerous contributions, has brought forward evidence by clinical and lumbar puncture studies of the great frequency of intracranial hemorrhage not only during difficult delivery but also during apparently normal birth. The observations of De Lee,²⁶ Ehrenfest and Crothers support these conclusions.

Fischer²⁷ examined 500 brains from newly born, mature, prematurely born and nursing infants in the Frankfort Institute. Pathologic changes, such as anemic necrosis and hemorrhages, could be seen even with the naked eye in 65 per cent of these. Microscopic examination revealed fat necrosis in the brain substance itself. From the character of the changes the conclusion was drawn that they were due to trauma sustained during birth. Hardly 5 per cent of the nursing's brains were entirely free from these changes. The lesions were most numerous, severe and extensive in the infants born prematurely. The hemorrhages into the eye and inner ear are ascribed to disturbances of circulation resulting from pressure on the presenting head during birth. Kearney,²³ working with Sharpe, found these eye changes so common that he concluded that every child whose delivery was difficult or instrumental should have its eyegrounds examined directly after birth and that if pressure signs are determined in the eye and confirmed in the cerebrospinal fluid a decompression operation should be done as soon as possible. Sharpe, in his numerous writings on the subject, concludes that intracranial hemorrhage in the newborn is more common than had been suspected and believes that in a large percentage of infants with the milder degrees of hemorrhage some form of cerebral spastic paralysis with or without mental impairment develops later on. He states, however, that Little's disease should be differentiated from conditions due to intracranial hemorrhage. Ford, Crothers and Putnam,²⁴ in a discussion of the theories of etiology, believe that if there is any tendency toward asymmetrical disturbance the cases are regarded as probably due to birth injuries.

So many cases diagnosed as intracranial hemorrhage are observed in apparently normal delivery that it must be concluded either that trauma is not a sine qua non for intracranial hemorrhage or that the finding of blood

17. Little, W. J.: *Lancet*, Dec. 16, 1843.

18. Little, W. J.: On the Influence of Abnormal Parturition, Difficult Labors, Premature Birth, Asphyxia Neonatorum on the Mental and Physical Condition of the Child, Especially in Relation to Deformities, *Tr. Obst. Soc. London* 3: 293, 1862.

19. McNutt, Darah, cited by Collier.¹⁴

20. Freedom, Leon: *Cerebral Birth Palsies*, *Arch. Neurol & Psychiat.* 26: 524-548 (Sept.) 1931.

21. (a) Sharpe, William: *Intracranial Hemorrhage in the Newborn*, *J. A. M. A.* 81: 620 (Aug. 25) 1923. (b) Sharpe, William, and MacLachair, A. S.: *Surg., Gynec. & Obst.* 38: 200-206 (Feb.) 1924; (c) *Further Observations of Intracranial Hemorrhage in the Newborn*, *J. A. M. A.* 86: 332 (Jan. 30) 1926.

22. Ehrenfest, Hugo: *Can Intracranial Birth Injuries Be Prevented?* *J. A. M. A.* 92: 97-99 (Jan. 12) 1929.

23. Kearney, J. A.: *Eyeground in Cerebral Paralysis*, *New York State J. Med.* 105: 214 (Feb. 3) 1917.

24. Ford, F. R.; Crothers, Bronson, and Putnam, M. C.: *Birth Injuries of the Central Nervous System*, *Medicine Monographs*, Baltimore, Williams & Wilkins Company 2: 23, 1927. Crothers, Bronson: *Disorders of the Nervous System in Childhood*, *J. A. M. A.* 92: 99-100 (Jan. 12) 1929.

25. Merwarth, H. R.: *The Role of Arterial Occlusion and Anoxemia in the Cause of the Cerebral Diplegias*, *New York State J. Med.* 29: 1 (Jan. 1) 1929.

26. De Lee, J. B., in discussion on Sharpe and MacLachair.^{21c}

27. Fischer, Jk.: *Das Geburtstrauma in seinen Folgen fuer Gehirn und Szeugling*, *Schweiz. med. Wchnschr.* 54: 905 (Oct. 2) 1924.

in the spinal fluid or on examination of the eyegrounds is of no particular significance. That trauma is not essential is shown by Margaret Warwich,²⁸ who stated that cerebral hemorrhage occurred in 50 per cent of thirty-six young infants who died, and that the condition is brought on by trauma in normal or rapid deliveries, by congestion or asphyxiation in slow deliveries or by disease of the child itself. She states that so-called hemorrhagic disease of the newborn occurred in 44 per cent of the deaths in her series. Rodda²⁹ has shown that in hemorrhagic disease of the newborn the coagulation and bleeding times are prolonged. He concluded that every newborn infant presenting symptoms should have its bleeding and coagulation times tested and, if found to be increased, whole human blood should be injected. Sharpe did not find hemorrhagic disease of the newborn a common etiologic factor in his series of cases but stated that the early treatment should be a combined one—increasing coagulation time and early drainage by lumbar punctures of whatever hemorrhage had already occurred. Parenthetically, Grulee³⁰ does not agree with Sharpe as to treatment. He believes that the best plan for early treatment is to see that nothing is done to disturb the quiet of the infant. De Lee²⁶ says that "hemorrhagic diathesis of the newborn is almost unknown in infants delivered by cesarean section." Roberts,³¹ after a study of the spinal fluid of 423 newborn Negroes, concluded that xanthochromia of the spinal fluid in newborn infants is a physiologic condition and is in no way dependent on the existence of hemorrhage. Intracranial hemorrhage is a common occurrence even in normal labor, and only in severe cases does it exhibit symptoms. Since the death rate is high and death occurs very shortly after birth, the possibility of later and permanent disability resulting from intracranial hemorrhage seems remote.

3. *Asphyxia*.—As already noted by Little, this is thought to be the causal factor in a large proportion of cases. The venous stasis during delivery favors hemorrhage. Tissier¹⁶ states that one must attribute the majority of cases of spastic infantile paralysis to asphyxia rather than to traumatism. Asphyxia is particularly likely to occur in the course of podalic version when the cord is almost inevitably compressed, in breech presentation and in cases in which the cord is wrapped round the neck. It is possible, too, that the presence of blood in the spinal fluid found immediately after birth is the result of venous stasis. Traumatism and blood stasis may be associated. Asphyxia is given an important place as the causal factor of hemorrhage by Ehrenfest,²² but asphyxia may be merely a symptom of hemorrhage already present. Asphyxia, however, may prolong hemorrhage.

4. *Anoxemia*.—Closely allied with the role of asphyxia as a causal factor is the theory of Merwarth,²⁵ who believes that an occlusion of vessels incident to extreme molding causes an anoxemia with serious effects on brain tissue. A torsion or compression of an artery may deprive nerve cells of oxygen. He cites the

laboratory experiments of Cannon and those of Pike and Gomez to show the degrees to which the various cells are able to withstand deprivation of oxygen. According to the table of Drinker, the cerebrum (small pyramidal cells) can withstand the deprivation of oxygen eight minutes, the cerebellum (Purkinje cells) thirteen minutes, the medullary centers from twenty to thirty minutes, the spinal cord from forty-five to sixty minutes, the sympathetic ganglions one hour, and the myenteric plexus three hours.

5. *Air Embolism*.—Langenskiöld³² suggests gas embolism as a likely cause of congenital spastic diplegia or Little's disease, basing his hypothesis on a clinical similarity between caisson disease and Little's disease. He says that air in the heart and large vessels has been reported at autopsy of the asphyxiated newborn by several writers. Intra-uterine pressure can exceed 400 mm. of mercury during labor pains. He believes it is possible that air under this pressure accidentally introduced into the uterine cavity can be forced through the placental veins into the fetal circulation. His experiments with rabbits, however, were unsuccessful.

As a summary, abnormal delivery at term acts in three ways on the infant's brain: (1) by traumatizing it, (2) by causing a prolonged venous stasis (asphyxia), and possibly (3) by an anoxemia caused by an occlusion of an artery. Hemorrhagic disease of the newborn may possibly be an important factor but, of course, is not caused by difficult birth.

CAUSES OPERATING DURING THE FIRST FEW MONTHS OF LIFE

Among the causes operating during the first few months of life there are particularly the acute infections of infancy such as measles, scarlet fever, pneumonia, whooping cough, meningitis or an infectious agent giving rise to some form of encephalitis causing probably minute hemorrhages. Weber³³ adds another cause, which must be extremely rare, in his paper on complete mindlessness and cerebral diplegia associated with ether anesthesia. The child was well until 2 years of age, and the convulsions occurred during anesthesia with ether in acute appendicitis. The role of convulsions has been very much discussed, but it is likely that they are only the common results of the same cerebral lesion. Little could attribute only one of his 200 cases to an extra-uterine cause.

SUMMARY

Little's disease is not a separate and distinct clinical entity. Many factors are concerned which give rise to the clinical picture of the cerebral palsies, and it is impossible to find a cause which applies indiscriminately to all cases. The hemiplegias are differentiated from the diplegias and paraplegias both clinically and pathologically. Asymmetrical lesions indicate some factor operating before birth. Neuropathic heredity, primary degeneration of the brain or developmental arrest, infections, premature birth, hemorrhagic disease of the newborn, asphyxia and anoxemia are discussed as causal factors in the symmetrical lesions.

10515 Carnegie Avenue.

28. Warwich, Margaret: Cerebral Hemorrhage of Newborn, *Am. J. M. Sc.* 158:95 (July) 1919.

29. Rodda, F. C.: Determining Coagulation Time of Blood in Newborn, *Am. J. Dis. Child.* 19:269 (April) 1920.

30. Grulee, C. G.: Treatment of Intracranial Hemorrhage in the Newborn, *J. A. M. A.* 85:336 (Aug. 1) 1925.

31. Roberts, M. H.: The Spinal Fluid in the Newborn, *J. A. M. A.* 85:500 (Aug. 15) 1925.

32. Langenskiöld, F.: Kann eine während der Geburt bei dem Kinde entstandene Casemollie die Ursache von Spastischen Diplegie oder Littleschen Krankheit sein? *Acta Paediatr. Scand.* 2:137, 1931.

33. Weber, F. P.: Complete and Cerebral (Cortical) Diplegia with Ether Anesthesia, *Brit. J.*

egree of 14 (ex)
sions Associated
in March) 1931.

THE TREATMENT OF LOBAR PNEUMONIA WITH RABBIT ANTIPNEUMOCOCCUS SERUM

PRELIMINARY REPORT

ELMER H. LOUGHLIN, M.D.
RICHARD H. BENNETT, M.D.
AND
SAMUEL H. SPITZ, M.D.
BROOKLYN

Rabbit antipneumococcus serum was introduced in 1937 as a therapeutic agent in the specific treatment of lobar pneumonia by Horsfall, Goodner, MacLeod and Harris.¹ They reported only one death in twenty-two cases of lobar pneumonia in which treatment was with this serum. Their series included patients with pneumonia caused by pneumococci of types I, II, VII and VIII.

More recently they reported an additional series of cases, bringing the total to sixty-seven.² Included in this report were cases of lobar pneumonia due to pneumococci of types I, II, III, V, VI, VII, VIII, XIV and XVIII in which treatment was with homologous rabbit antipneumococcus serum. The mortality rate for the entire series was 13.4 per cent. However, when thirteen cases of type III pneumococcus pneumonia, for which the mortality rate was 46 per cent, were excluded, the mortality for the remaining fifty-four cases was 3.7 per cent. They concluded from these statistics that rabbit type III antipneumococcus serum was not an efficient therapeutic agent for the type III pneumococcus pneumonia and that the death rate for other types had been materially lowered.

Unconcentrated and refined rabbit antipneumococcus serum was prepared by these investigators and used at the Hospital of the Rockefeller Institute for Medical Research and seven other hospitals. They¹ compared the efficacy of rabbit and horse antipneumococcus serum and found (1) higher mouse-protective titers, in the rabbit serum even when unconcentrated; (2) practically entire absence of anaphylactic and anaphylactoid reactions when rabbit antipneumococcus serum was used; (3) a lower incidence of empyema in patients treated with rabbit antipneumococcus serum and when an infected pleural exudate had developed its sterilization in most instances; (4) more rapid passage into the tissues and exudates of the rabbit antibody, because it was from one-fourth to one-third the size of the horse antibody; (5) more rapid immunization of rabbits and less expense in the preparation of unconcentrated rabbit antipneumococcus serum than in the preparation of refined and concentrated horse antipneumococcus serum.

During December 1937 and January and February 1938 we studied sixty-nine patients with lobar pneumonia caused by types I, II, V, VII, VIII and XIV pneumococci treated with the homologous unconcentrated and refined rabbit antipneumococcus serum. These patients were from the pneumonia service of the Long Island College Hospital and the medical services of the Kings County and Norwegian hospitals (Brook-

lyn).³ The majority were of the poorer classes, and many were malnourished or addicted to the use of alcohol. Likewise, the majority had had no medical attention prior to admission. Because of the nonselection of patients for treatment, several patients with terminal pneumonia complicating disease processes such as subacute bacterial endocarditis, peritonitis or decompensated rheumatic heart disease were treated with serum. These patients, for whom serum was used as an auxiliary therapeutic measure and who at autopsy showed disease processes of themselves lethal, were excluded from the series.

ADMINISTRATION OF RABBIT ANTIPNEUMOCOCCUS SERUM

Immediately after admission of the patient to the service a suitable specimen of sputum was obtained. The sputum was typed for pneumococci by the Neufeld reaction as proposed by Sabin. While the typing was in progress a history was obtained and a physical examination was made. Blood for culture was taken. A roentgen examination of the chest was made.

When a type of pneumococcus was isolated for which there was available a homologous rabbit antipneumococcus serum, the Francis test was made. Material for this test was available only for types I and II. One-tenth cc. of a 1:10,000 dilution of the specific pneumococcus polysaccharide (specific soluble substance "SSS") was injected intradermally on the volar surface of the forearm. A like amount of 0.9 per cent physiologic solution of sodium chloride was similarly injected as a control. If tissue or skin antibodies were present a positive reaction was noted. A positive reaction developed as an urticarial wheal surrounded by a zone of erythema of varying extent. Rabbit antipneumococcus serum usually was not administered when a strongly positive reaction was obtained. It was invariably administered when there was a negative reaction. This test was used also as a guide in determining the need of further serum therapy; when it was negative and the patient continued to be acutely ill more serum was administered. The development of a positive reaction after a previously negative reaction usually signified sufficient serum treatment. However, the clinical appearance of the patient really determined the course of action.

Prior to the administration of any serum, the patient was closely questioned as to personal and familial allergic conditions, particularly with regard to sensitivity to rabbits. During the physical examination, evidence of allergy was carefully investigated.

An intravenous and a conjunctival test were made to determine sensitivity to rabbit serum.

For the intravenous test 0.1 cc. of the rabbit antipneumococcus serum which was to be used in the treatment of the patient was diluted to 5 cc. with 0.9 per cent physiologic solution of sodium chloride. This serum (1:50 dilution of rabbit antipneumococcus serum) was injected into a vein. The blood pressure and pulse rate were taken just prior to and five minutes after the administration of this test dose of diluted serum. If there was a drop in blood pressure of 20 mm. of mercury or an increase in the heart rate of 20 beats per minute, the patient was considered sensitive to rabbit serum.

From the Department of Internal Medicine, Long Island College of Medicine.

The rabbit antipneumococcus serum used in the cases reported in this paper was supplied by the Lilly Research Laboratories, Indianapolis.

Anne M. Smith, Dr. Aaron Kaminsky, Dr. Gerald Griffin, Dr. Henry Gozan and William V. Larkin gave technical and clinical assistance.

1. Horsfall, F. L., Jr.; Goodner, Kenneth; MacLeod, C. M., and Harris, A. H.: Antipneumococcus Rabbit Serum as a Therapeutic Agent in Lobar Pneumonia. *J. A. M. A.* 108: 1483 (May 1) 1937.

2. Horsfall, F. L., Jr.; Goodner, Kenneth; MacLeod, C. M., and Harris, A. H.: New York State *J. Med.* 38: 245 (Feb. 15) 1938.

3. The members of the staffs of the hospitals named, notably Drs. Tasker Howard, J. Hamilton Crawford, Henry Moses, Henry Wolfer, George A. Merrill, Arthur Fankhauser, Edward E. Cornwall, Theodore G. Guenther and Kenneth Jennings, permitted us to treat patients in their services with unconcentrated and refined rabbit antipneumococcus serum.

For the conjunctival test 0.1 cc. of a 1:10 dilution of rabbit serum was placed in the conjunctival sac. Sensitivity of the patient to rabbit serum was manifested by lacrimation and itching and, on examination, by congestion of the bulbar and palpebral conjunctivas.

When the patient proved to be not sensitive to the rabbit antipneumococcus serum, the projected dose was given intravenously. From 10 to 15 grains of acetylsalicylic acid (0.6 to 1 Gm.) was given by mouth just prior to the administration of serum. This dose was repeated prior to each subsequent administration of serum when further serum therapy was found necessary.

TABLE 1.—Lobar Pneumonia Due to *Pneumococcus* Type I Treated with Rabbit Type I Antipneumococcus Serum

Case No.	Race	T	P	R	Physical and x-ray	Pneum. fluid	Complications	Bacteremia per cc.	WBC thousands	Neutrophils %	First serum hours after onset	Total units of serum	No. of doses	Days after first dose	Serum sickness	Result
1	♂	19	75	120	30			8	16.8	78	35	200,000	1	8		R.
2	♂	22	254	40	41				274	22	55	200,000	1	13	urticaria 12-15 days	R.
3	♂	31	102	90	34				21.0	81	168	300,000	1	5		R.
4	♂	27	254	150	40		multiple abscesses	50	119	76	126	200,000	1			D.
5	♂	49	244	14	28		metastasis	160	6.0	58	94	300,000	2			D.
6	♂	36	222	112	34				13.6	65	37	300,000	2	16		R.
7	♂	17	113	110	40				14.8	62	29	100,000	1	4	urticaria 12-15 days	R.
8	♂	21	143	130	34				13.5	76	41	200,000	1	6		R.
9	♂	42	212	130	34		bronchial asthma	33	11.4	72	152	300,000	1	3½	urticaria 12-15 days	R.
10	♂	35	254	110	41			26	18.4	94	75	300,000	2	24	lower 12-15 days	R.
11	♂	19	254	145	34			20	11.6	60	50	100,000	1	8	urticaria 12-15 days	R.
12	♂	40	254	110	34		severe atelectasis		20.0	92	102	300,000	1	10		R.
13	♂	52	212	110	40			6	11.6	84	101	100,000	2	30		R.
14	♂	43	242	110	40		diaphragm		15.0	90	56	300,000	1	12	urticaria 12-15 days	R.
15	♂	62	254	110	40		cuticular perforation	65	4.6	48	168	200,000	1	6		D.
16	♂	62	244	120	31						26	100,000	1	8		R.
17	♂	22	252	130	41						36	100,000	1	6		R.
18	♂	36	254	150	40		effusion empyema lung drainage				38	200,000	1	9	urticaria 12-15 days	R.
19	♂	54	242	115	34			20	11.6	64	124	300,000	2	30	urticaria 12-15 days	R.
20	♂	22	102	120	24				18.5	76	60	120,000	1	8	urticaria 12-15 days	R.
21	♂	53	212	126	34		diaphragm	36	25.4	90	15	200,000	3	48		R.
22	♂	32	105	128	28			20	15.4	98	46	200,000	1	4	urticaria 12-15 days	R.
23	♂	38	112	112	31		hyperthyroidism	24	10.2	78	72	500,000	2	56		R.
24	♂	26	254	116	41			18	13.4	66	240	100,000	2	8		R.
25	♂	33	242	120	34			8			90	300,000	1	22		R.
26	♂	34	254	116	37				14.2	60	104	300,000	1	15		R.
27	♂	38	242	100	34				40.8	94	127	300,000	1	5		R.
28	♂	27	212	112	34		diaphragm	20	20.3	62	168	600,000	3	48	urticaria 12-15 days	R.
Average											68	286,000		15½		

♂ D-died ♀ white
• R-recovered ♀ Negro

An ordinary intravenous drip infusion set was used in the administration of the serum. Physiologic solution of sodium chloride was run into the vein, and after the rate of flow was regulated the administration of serum was begun. After the injection had been completed the infusion set was flushed with from 25 to 50 cc. of physiologic solution of sodium chloride. The serum, however, was never diluted with either dextrose or salt solution.

A sphygmomanometer cuff was placed on the arm opposite to the one in which the serum was to be given. The administration of the serum was begun, and the nurse noted any changes in the pulse. When there was a significant increase in pulse rate or when the patient manifested any anaphylactic or anaphylactoid symptoms the flow of serum was temporarily discontinued and the blood pressure taken. If there was no fall in blood pressure the administration of the serum was permitted to continue. If there was a fall in blood pressure,

especially when it was of more than 20 mm. of mercury, 1 or 2 minims of 1:1,000 epinephrine hydrochloride solution was administered intravenously. After recovery of the blood pressure to its previous level the serum was allowed to flow in very slowly, great caution being exercised.

One patient presented anaphylactoid symptoms; the blood pressure did not fall, nor did the pulse rate rise. In another patient the heart rate rose, the blood pressure fell 30 mm. of mercury and urticaria developed. After 2 minims of epinephrine hydrochloride was given intravenously the blood pressure returned to its previous level, the urticaria disappeared and serum therapy was continued without further difficulty. Otherwise no untoward reactions were observed.

DOSAGE OF RABBIT ANTIPNEUMOCOCCUS SERUM

For the past four years we have carefully computed the dose of horse antipneumococcus serum necessary to treat adequately pneumococcal lobar pneumonia. The doses of rabbit antipneumococcus serum used in the cases reported here correspond to the doses of horse antipneumococcus serum used during this period. The minimum quantity of serum, measured in Felton units, which has been found adequate to treat lobar pneumonia is now considered as the projected, or necessary dose. The projected dose was given in one administration in the sixty-nine cases reported in this paper and was found to be sufficient in forty.

To patients less than 40 years of age who had been ill from forty-eight to sixty hours and who had involvement of one lobe or a portion of one lobe, without complications or bacteremia, 160,000 units was given as the projected dose for pneumonia caused by type I, V or VIII pneumococci. However, during January, February and March 200,000 units was administered as the projected dose for pneumonia caused by type I, V or VIII pneumococci. This increase was made because the virulence of the pneumococci is enhanced and the resistance of the patients lowered by infections of the respiratory tract during these months. Patients at this time were usually sicker than those seen in previous or subsequent months. For pneumonia caused by type II, VII or XIV pneumococci, 200,000 units was administered, and during January, February and March from 260,000 to 300,000 units was given, the amount depending on the degree of toxemia.

To patients over 40 years of age who had been ill more than sixty hours and had involvement of more than one lobe, with bacteremia or other complications, 40,000 units more was given for pneumonia caused by types I, V or VIII pneumococci except during January, February and March, during which months the dose was increased by 100,000 units. For pneumonia caused by type II, VII or XIV pneumococci, an increase of 100,000 units was made except in January, February and March, when an additional 200,000 units was given.

Negroes, especially Puerto Ricans, needed more than these doses, and we found that an increase of from 40,000 to 60,000 units above the projected minimum dose for type I, V and VIII infections and of 100,000 units above the minimum dose for type II, VII and XIV infections was necessary.

As stated previously, the entire projected dose was given in one administration. In forty cases in which treatment with one dose was successful the temperature came to normal in an average of nine hours. In twenty-nine other cases the temperature did not fall to

normal within this period and a second dose was given. The amount used in the second dose was determined by the response to the first dose, the clinical condition of the patient, the presence or absence of bacteremia and in the case of type I and type II infections the results of the Francis test. We have noted that both the respiratory and the pulse rate, especially the former, are excellent clinical guides as to the necessity of further

treated with one dose of serum. In these patients crisis occurred in an average of eight and one-half hours; the average single successful dose was 215,000 units. The blood stream was sterilized in every instance after the administration of the projected dose. Serum sickness developed in twelve patients and was characterized by fever in two, by arthritis in two and by urticaria in eight.

TABLE 2.—Lobar Pneumonia Due to *Pneumococcus Type II* Treated with Rabbit Type II Antipneumococcus Serum

Case No.	Age	Sex	T	P	R	Physical and x-ray	Pleural fluid	Complications	Bacteremia col per cc	WBC thousands	Pulmonary phis %	Total serum hours after onset	Total units of serum	No. of doses	Final serum hours after onset	Serum sickness	Results
1	33	M	140	140	46	A				115	84	106	420,000	2	15	fever 8 th day	R
2	59	M	104	120	45	A		pulmonary edema		184	94	260	160,000	1	4		R
3	24	M	103	140	30	A				140	80	76	640,000	3	23	fever 1 st day	R
4	26	M	103	120	30	A				162	80	122	160,000	1	5	fever 8 th day	R
5	43	M	104	120	62	A		pulmonary edema	22	290	90	144	300,000	1			Da
6	48	M	126	124	30	A			8	124	90	16	400,000	1	20		R
7	17	M	105	121	30	A				182	84	53	200,000	1	7		R
8	27	M	104	120	22	A				64	64	140	200,000	1	8	urticaria 10 th day	R
9	18	M	102	126	44	A			16	122	90	36	400,000	1	24	urticaria 11 th day	R
10	54	M	104	120	40	A		infected empyema	36	186	82	168	800,000	4			D
11	34	M	120	120	34	A				184	94	150	200,000	1	12		R
12	35	M	103	120	20	A				169	90	45	200,000	1	8		R
13	21	M	104	120	42	A			8	430	98	104	300,000	1	6	urticaria 10 th day	R
14	45	M	104	117	40	A			34	179	90	168	760,000	5	120	fever 1 st day	R
15	46	M	106	120	30	A			45	210	75	200	900,000	5	80	urticaria 7 th day	R
16	44	M	104	120	20	A				182	87	36	200,000	1	16		R
Average												113	390,000		25		

*Recovered
*Died

W-white
N-negro

serum therapy. When either or both remained elevated, more serum was given. The amount used in subsequent doses was calculated in the manner used for determining the second dose.

RESULTS

Pneumonia Due to *Pneumococcus Type I*.—Twenty-eight patients with type I pneumonia were treated with type I unconcentrated and refined rabbit antipneumococcus serum. The important details are summarized in table 1. The pneumonia had been present for an average of eighty-eight hours, with extremes of fifteen hours and 240 hours, before rabbit serum was administered. Eighteen patients were treated after the pneumonia had been present more than seventy-two hours. Sixteen patients were admitted to the service with consolidation of two or more lobes, and of these two had bilateral consolidation. Fifteen patients had bacteremia on admission. The average amount of rabbit serum given was 286,000 units. Reactions in the form of mild or moderate chills following administration of serum occurred in eighteen cases. The temperature fell to normal in an average of sixteen hours, with extremes of three and one-half hours and forty-eight hours. Two patients had an infected pleural exudate on admission. In one it was sterilized and disappeared, and in the other empyema developed and was drained surgically.

Twenty-five patients recovered and three died, the mortality rate for type I pneumonia being 10.7 per cent. Each of the patients who died had severe bacteremia and was admitted late in the course of the disease. Treatment was delayed in case 4 until 126 hours after onset, in case 5 until ninety-four hours after onset and in case 15 until 168 hours after onset. Patient 15 was moribund when serum therapy was begun. Seventeen patients, five of whom had bacteremia, were successfully

treated with one dose of serum. In these patients crisis occurred in an average of eight and one-half hours; the average single successful dose was 215,000 units. The blood stream was sterilized in every instance after the administration of the projected dose. Serum sickness developed in twelve patients and was characterized by fever in two, by arthritis in two and by urticaria in eight.

Pneumonia Due to *Pneumococcus Type II*.—Sixteen patients with type II pneumonia were treated with type II unconcentrated and refined rabbit antipneumococcus serum. The important details are summarized in table 2. The pneumonia had been present for an average of 113 hours, with extremes of sixteen hours and 240 hours, before rabbit serum was administered. Eleven patients were admitted to the service after the pneumonia had been present more than seventy-two hours. Six patients had consolidation of two or more lobes, and two of these had bilateral consolidation. In seven patients bacteremia was found on admission, and one patient had infected pleural fluid. The average amount of rabbit serum given was 390,000 units. Reactions in the form of mild chills following administration of serum occurred in nine cases. The temperature came to normal in an average of twenty-five hours, with extremes of four hours and 120 hours, after serum therapy was begun. Patient 10, who had infected pleural fluid, had an empyema and died before surgical drainage could be instituted. In all, two patients died, and both had bacteremia on admission. Serum therapy was not given until 146 hours after onset to patient 5, who was moribund on admission and who had a cardiac rate of 175 per minute and attacks of pulmonary edema. He died within thirteen hours after serum therapy was begun. Ten patients, four of whom had bacteremia, were successfully treated with one dose. In these patients the temperature fell to normal in an average of ten hours, and the single successful dose averaged 230,000 units. The blood stream was invariably sterilized after the projected dose had been given. Serum sickness developed in eight patients, of whom four had fever, two had urticaria and two had arthritis. The mortality rate for type II pneumonia was 12.5 per cent.

TABLE 3.—Lobar Pneumonia Due to *Pneumococcus Type V* Treated with Rabbit Type V Antipneumococcus Serum

Case No.	Age	T	P	R	Physical and x-ray	Pleural fluid	Complications	Bacteremia col per cc	WBC	Pulmonary phis %	Total serum hours after onset	Total units of serum	No. of doses	Final serum hours after onset	Serum sickness	Results
1	34	M	103	120	30	A	nuclear infection	22	146	73	76	320,000	2	28		R
2	14	M	106	120	30	A			126	92	122	140,000	1	4	urticaria 10 th day	R
3	16	M	103	120	20	A	pneumonia (occasional)		171	72	26	200,000	1	6		R
4	52	M	103	120	30	A		172	129	86	70	440,000	2	28		R
5	33	M	124	120	40	A			216	92	170	220,000	1	5		R
6	54	M	106	120	30	A			146	75	96	720,000	1	6	urticaria 8 th day	R
Average											97	225,000		15		

*Recovered *Died

Pneumonia Due to *Pneumococcus Type V*.—Six patients with type V pneumonia were treated with type V unconcentrated and refined rabbit antipneumococcus serum. The important details are summarized in table 3. The pneumonia had been present for an average of ninety-seven hours, with extremes of twenty-six hours and 170 hours. Four patients were treated after the pneumonia was present at least ninety-six hours. Three patients were admitted with consolidation of two or more lobes, and two of these had bilateral consolidation. Two patients had bacteremia on admission. The average amount of rabbit serum

given was 230,000 units. Reactions in the form of mild chills following administration of serum occurred in four cases. The temperature fell to normal within an average of thirteen hours, with extremes of four hours and twenty hours. Recovery occurred in all six cases. Four patients were successfully treated with one dose, and two patients required two doses. The average time of crisis after the single successful dose was five hours,

TABLE 4.—Lobar Pneumonia Due to *Pneumococcus Type VII* Treated with Rabbit Type VII Antipneumococcus Serum

Case No	Race	Sex	T	P	R	Physical and x-ray	Pleural fluid	Complications	Bacteremia per cc	WBC per mm ³	Neutrophils %	Time hours after onset	Total units of serum	No. of doses	Time hours after first serum	Serum sickness	Result
1	W	M	33	104	120	36	A	sterile		194	85	176	560,000	3	30	urticaria 12-24 hr	R
2	W	M	21	104	116	34	A			294	82	24	160,000	1	12		R
3	W	M	22	124	120	35	A		18	270	83	20	700,000	3	28		R
4	W	M	33	124	130	42	A		80	43	76	106	100,000	6	96	urticaria 24-48 hr	R
5	W	M	33	125	140	40	A			194	77	79	220,000	1	8		R
6	W	M	42	123	130	32	A			210	76	20	165,000	1	8		R
7	W	M	23	104	120	32	A		16	220	87	24	450,000	3	23	fever 1st day	R
8	W	M	12	125	145	45	A	dis. med.		120	60	132	450,000	2	24		R
9	W	M	37	122	120	42	A		26	86	76	168	360,000	2	28		R
Average													90	458,000	26		

* Recovered. A, white; N, negro.

and the average projected dose was 185,000 units. In both cases of bacteremia this condition disappeared after the projected dose had been given. Serum sickness characterized by urticaria developed in two cases.

Pneumonia Due to *Pneumococcus Type VII*.—Nine patients with type VII pneumonia were treated with type VII unconcentrated and refined rabbit antipneumococcus serum. A summary of the important details is to be found in table 4. The pneumonia had been present for an average of ninety hours, with extremes of twenty hours and 192 hours. Five patients were treated after the pneumonia had been present more than seventy-two hours. Three patients had consolidation of two or more lobes, and one of these had bilateral consolidation. Four patients had bacteremia on admission. The average amount of rabbit serum given was 458,000 units. Reaction in the form of mild or moderate chills following administration of serum occurred in seven cases. The temperature fell to normal within an average of twenty-six hours, with extremes of eight hours and ninety-six hours. Recovery occurred in all nine cases. Patient 4, who required over 1 million units during a period of five days, had complicating delirium tremens. Patient 5 had, in addition to lobar pneumonia, acute otitis media, which complicated varicella. Three patients were successfully treated with one dose, the average time of crisis being nine hours and the average single successful dose being 173,000 units. The bacteremia invariably disappeared after the projected dose was administered. Serum sickness developed in three patients, of whom one had fever and two had urticaria.

Pneumonia Due to *Pneumococcus Type VIII*.—Six patients with type VIII pneumonia were treated with type VIII unconcentrated and refined rabbit antipneumococcus serum. The important details are summarized in table 5. The pneumonia had been present for an average of eighty-two hours, with extremes of thirty-six hours and 177 hours. Two patients were treated before seventy-two hours had elapsed. Two patients were admitted to the service with consolidation of two or more lobes, and both of these had bilateral consolidation. Two patients had bacteremia on admis-

sion. The average amount of rabbit serum given was 250,000 units. A reaction in the form of mild chills occurred in three cases. The temperature fell to normal within an average of twelve hours, with extremes of six hours and twenty-six hours. Recovery occurred in all six cases. Patient 1 had, in addition to pneumonia, hypertension, generalized arteriosclerosis and myocardial insufficiency. Patient 5 had severe icterus, delirium tremens and cirrhosis of the liver. Patient 6 had arteriosclerotic heart disease. Five patients were successfully treated with one dose of serum; crisis in these occurred in an average of eleven and one-half hours, and the average single successful dose was 224,000 units. In both cases of bacteremia this condition disappeared after the projected dose had been administered. Serum sickness characterized by urticaria developed in three patients.

Pneumonia Due to *Pneumococcus Type XIV*.—Four patients with type XIV pneumonia were treated with type XIV unconcentrated and refined antipneumococcus serum. The important details are summarized in table 6. The pneumonia had been present for an average of 109 hours, with extremes of forty-eight hours and 169 hours. Two patients were admitted with consolidation of two or more lobes, and one of these had bilateral consolidation. Two patients had bacteremia on admission. The average amount of rabbit serum given was 696,000 units. Reactions in the form of mild to moderate chills occurred in all four cases. The temperature fell to normal in an average of sixty-four hours, with extremes of twenty-four hours and 120 hours. Recovery occurred in all four cases. Delirium was present in three cases, and patient 3 had, in addition to pneumonia, fibrinous pericarditis and pericardial effusion. In both cases of bacteremia this condition disappeared after the projected dose had been administered. One patient was treated with one dose of

TABLE 5.—Lobar Pneumonia Due to *Pneumococcus Type VIII* Treated with Rabbit Type VIII Antipneumococcus Serum

Case No.	Race	Sex	T	P	R	Physical and x-ray	Pleural fluid	Complications	Bacteremia per cc	WBC per mm ³	Neutrophils %	Time hours after onset	Total units of serum	No. of doses	Time hours after first serum	Serum sickness	Result
1	♂	W	43	103	110	76	A	pulmonary consolidation		210	90	72	170,000	1	36	urticaria 16-24 hr	R
2	♂	W	34	125	128	26	A			172	96	50	200,000	1	8	urticaria 16-24 hr	R
3	♂	W	46	114	130	45	A		15	31	72	127	350,000	1	96	urticaria 48-72 hr	R
4	♂	W	32	104	112	40	A		8	100	75	78	200,000	2	15		R
5	♂	W	47	123	120	30	A	icterus, delirium tremens, pericarditis, valvular disease		260	91	96	200,000	1	8		R
6	♂	W	54	106	110	30	A			210	89	36	500,000	1	6	urticaria 16-24 hr	R
Average													82	250,000	12		

* Recovered. A, white; N, negro.

65,000 units. Serum sickness developed in two patients and was characterized by urticaria and arthritis in one and fever in one.

COMMENT

Sixty-nine patients with lobar pneumonia were treated with homologous rabbit antipneumococcus serum. Twenty-eight patients had type I pneumococcus pneumonia, sixteen had type II, six had type V, nine had type VII, six had type VIII and four had type XIV. Forty-three patients were admitted seventy-two hours after the onset of the disease. Serum therapy was begun an average of ninety-six hours after the onset of the pneumonia. Thirty-two patients had consolidation of two or more lobes, and two of these had bilateral consolidation. Thirty-two patients had bacteremia. The temperature fell to normal in an average of twenty-six hours. There was a fatal outcome in five cases, in three

of which the pneumonia was of type I and in two of which it was of type II. In each of these cases the disease was complicated by bacteremia. There were no nonbacteremic deaths. Serum therapy was started late in each of these cases; the patients had all remained either at home or in a lodging house without any medical care. In the three fatal cases of type I pneumonia serum therapy was delayed until 126 hours, ninety-four hours and 168 hours after onset. In the two fatal cases

TABLE 6.—*Lobar Pneumonia Due to Pneumococcus Type XIV Treated with Rabbit Type XIV Antipneumococcus Serum*

Case No.	Age	Sex	T P R	Physical exam.	Pleural fluid	Bacteremia	U.S.G.	Head phis.	First serum hours after onset	Total units of serum	No. of doses	Crisis hours after onset	Serum sickness	Results
1	46	♂	102 150 34	A		delenum	26	90	169	600,000	2	40	Lower 1st dose	R
2	44	♂	100 150 32	A		delenum	46	90	70	1,500,000	4	120	Lower 1st dose	R
3	63	♀	102 150 40	A					48	650,000	1	24		R
4	50	♀	102 150 35	A		pneococcus	51	257	94	830,000	3	72		R
Average									109½	696,000	64			

* R. recovered. W. white. N. negro.

of type II pneumonia serum therapy was delayed until 146 hours and 168 hours after onset. Deaths from type V, VII, VIII or XIV pneumonia did not occur.

No patients with primary pneumococcic pneumonia died when treated within the first ninety hours of the disease. It must be noted, however, that the majority of the patients were admitted several days after the onset of the pneumonia and many of these had bacteremia. Despite the inclusion of cases in which serum therapy was delayed until late in the disease and the known high fatality in such cases, especially when the pneumonia is complicated by bacteremia, the mortality rate of this series was only 7.4 per cent.

Infected pleural fluid was found in three cases, and in two it developed into an empyema. The incidence of empyema was slightly over 3 per cent.

After study of these sixty-nine cases we found that:

1. It was possible to give the entire projected dose in one administration. As much as 500,000 units, included in a volume of 500 cc., of unconcentrated and refined rabbit antipneumococcus serum has been given in one administration without any untoward effects. The serum while being administered gave the patient no more discomfort than an intravenous infusion of physiologic solution of sodium chloride. Of the sixty-nine cases reported here, forty were treated successfully with one dose.

2. Bacteremia was controlled in most instances even when severe. The blood was rendered sterile when the entire projected dose had been given. Toxins were quickly neutralized, and in cases of type I and type II pneumonia a rapid development of tissue antibodies was obtained, as demonstrated by a positive reaction of the skin to pneumococcus polysaccharide (specific soluble substance).

3. An immediate reduction of the toxemia was usually obtained when only part of the projected dose had been administered. The patient frequently stated that he felt better after the first 20,000 to 40,000 units had run in. The toxemia invariably disappeared after the entire projected dose had been administered. The patient usually fell asleep, despite the fact that insomnia may have been a major complaint and, indeed, he frequently fell asleep during the administration of the serum.

4. There was usually a rapid reduction of the temperature and of the pulse and the respiratory rate. The

fall in the pulse and the respiratory rate was frequently coincident with the administration of the serum but most often occurred just prior to or together with the critical fall in temperature. Bradycardia was occasionally seen after the fall in temperature to normal.

5. Rabbit serum can be used without danger in the treatment of adults who have a sensitivity to horse serum or suffer from asthma due to horse dander. Two patients who were sensitive to horse serum were given rabbit antipneumococcus serum without any untoward reactions. This fact is important when treating pneumonia in children, many of whom have previously received antitoxins made from horses. Rabbit antipneumococcus serum will not sensitize children to horse serum antitoxins, which may be necessary at later periods of life. None of the patients reported in this paper were found to be sensitive to rabbit serum.

6. The incidence of serum sickness was lower with rabbit serum than with horse serum. The figure was 43 per cent for rabbit serum, as compared with 67 per cent for horse serum. Fever alone, of from 1 to 3 degrees F., occurred in 26 per cent of the patients who had serum sickness, urticaria in 60 per cent and arthritis in 14 per cent. There was no lymphadenitis in patients treated with rabbit serum. Serum sickness began between the seventh and the thirteenth day and lasted an average of three and one-half days. Rabbit serum sickness occurred an average of three days later than horse serum sickness. The febrile reaction, when it was the only manifestation of serum sickness, appeared from three to four days earlier than it did when it was accompanied by either urticaria or arthritis. Fever alone occasionally preceded either the urticaria or the arthritis and in one case continued for twelve days after the urticaria had disappeared. The arthritis and urticaria were milder than those seen in horse serum sickness. Circulatory collapse, which is noted occasionally with horse serum sickness, was not seen with rabbit serum sickness.

TABLE 7.—*Pneumococcic Pneumonia Treated with Homologous Rabbit Antipneumococcus Serum*

Type	Number of Cases	Infected Pleural Exudate, Num-ber	Bacteremia, Num-ber	First Serum, Hours After Onset, Average	Total Units of Serum, Average	Number of Single Doses	Crisis, Hours After First Serum, Average	Serum Sickness, Number	Mortality, Percentage
I....	28	2	15	88	286,000	17	15½	12	10.7
II....	16	1	7	113	390,000	10	25	8	12.5
V....	6	0	2	97	230,000	4	13	0	0
VII....	9	0	4	90	438,000	3	26	0	0
VIII....	6	0	2	82	230,000	5	12	3	0
XIV....	4	0	2	109	696,000	1	64	0	0
Total	69		32			40		20	
Percentage.....			46					43	7.4

7. Chills following the administration of the rabbit serum occurred in 65 per cent of the cases. These chills began from twenty minutes to one hour after the administration of the serum was begun, usually after about forty-five minutes. They were either mild or moderate and, other than the induction of warmth, did not need special treatment. At no time were they severe enough to be alarming. They were frequently followed by a rise in temperature. The individual peculiarities of the patients and not the lot of serum used affected the frequency of occurrence of the chills. Although several patients received the same lot, they did not all have chills. The rate of administration and the quantity of serum used did not seem to influence

either the occurrence or the severity of these reactions. The administration of rabbit antipneumococcus serum was preceded in most instances by the giving of acetylsalicylic acid. Although this drug limited the rise in temperature incident to the chills to 1 or 2 degrees and lessened the severity and duration of the chills, it did not decrease the frequency of occurrence. Chills did not recur with as great frequency after the second and third doses of serum when these were given. However, if they occurred after subsequent doses they appeared at the same time as they had after the first dose but were usually milder.

SUMMARY

1. Sixty-nine patients with lobar pneumonia caused by pneumococci of types I, II, V, VII, VIII and XIV were treated with homologous rabbit antipneumococcus serum. There were five fatal cases, three of type I and two of type II, in all of which there was bacteremia and in all of which serum treatment was delayed until late in the course of the disease. No patients died when treated within the first ninety hours of the disease. The mortality rate for the entire series was 7.4 per cent.

2. Forty patients were successfully treated with a single projected dose.

3. The blood stream was invariably sterilized when the projected dose had been administered.

4. There were no severe untoward reactions incident to the administration of the unconcentrated and refined rabbit antipneumococcus serum used by us.

FUNGUS INFECTIONS OF THE EXTERNAL EAR

EDWARD J. WHALEN, M.D.

HARTFORD, CONN.

Otomycosis is neither an uncommon nor a serious disease. Because the whole subject of mycology is receiving increasing attention from clinicians and because of the chaotic situation in regard to treatment of fungous infections, it is thought that a review of today's truth on this subject is justified. Infestation of the aural canal by fungi is a common condition. Of the many thousands of fungi, some twenty have been found to be pathogenic to man. Many of these pathogenic fungi have been found, with varying frequency, in the aural canal and have been thought to be the causal agent in some of the pathologic conditions found in the ear.

Of the pathogenic fungi found in cases of otomycosis, the most common are *Monilia*, *Aspergillus*, *Penicillium* and *Achorion*. Their relative frequency varies in different parts of the world. In China the predominating organism found in the aural canal is *Aspergillus*. This is true of the temperate zone of the Americas. In the Canal Zone *Monilia* is found more often than *Aspergillus*. The lesions produced by these different fungi are clinically similar, and it is only by cultural methods that their proper classification can be established.

The filamentous fungi, including *Aspergillus*, *Penicillium* and *Mucor*, have in the past been thought to be the only invaders of the aural canal. Observations in the past five years, both by clinicians and by mycologists, indicate that the yeastlike and budding fungi play an important part as pathogens in many pathologic con-

ditions of the skin and other body systems. These yeastlike fungi include *Monilia*, *Torula*, *Oidium* and *Coccidioides*. Not all these budding fungi have been found in cases of otomycosis. Since all are found in cutaneous lesions in other parts of the body, it is probable that continued search will reward the investigator with the finding of these yeasts in the aural canal.

The mycologist, in his enthusiasm, will find fungi everywhere, and most correctly, since wherever the phenomena of death and decay of organic matter take place, there will be found molds, fungi and yeasts following out their destiny of feeding and reproducing.

The clinician, with restrained enthusiasm, will accept the presence of these fungi in many disease states of body tissue but is reluctant to grant that their presence is proof of their being the cause of the pathologic changes.

While it is true that the reproduction in laboratory animals of the disease condition by inoculation with the suspected fungi is possible in some cases, in a greater number of cases it is impossible to reproduce the disease in animals. A responsible group of workers in this field look on most fungi as saprophytic in their activities and consider their presence in pathologic states as only another indication of the constant search by fungi for dead and decaying organic material. As secondary invaders, fungi and yeasts are not uncommonly found with ulcerative and infectious states and states of lowered tissue vitality.

These facts may be applied to the question of otomycosis in this manner: Certain fungi, including *Aspergillus*, *Monilia* and *Achorion*, are found in the aural canal associated with marked dermatitis. They can produce similar lesions in the skin of laboratory animals and can be recovered from these lesions. The fungous dermatitis of the canal clears up completely under treatment directed toward the control of the fungous infection. The condition does not improve under antibacterial or antipruritic treatment but only when some fungicidal agent is used. The story, as far as the external ear is concerned, appears to be complete.

Fungous infections of the aural canal produce what is essentially a dermatitis of the lining membrane of the canal. This dermatitis frequently extends to the membrane of the drum and sometimes, through a perforation in the drum, to the cavity of the middle ear. The patient will invariably complain of an itching sensation about the ear together with some moisture or discharge from the canal. If the products of the infection collect in the canal there will be some impairment of hearing. As a result of the pruritus and scratching, there is often a secondary infection by some of the pyogenic organisms, with all the possibilities of such a complication.

Examination of an ear infected with any of the pathogenic fungi will reveal any or several of the phases of dermatitis. There may be only a branny desquamation of the lining membrane with a story from the victim of persistent itching, more marked at night. With a more virulent infection there will be found a moist mass of debris filling the canal. On the removal of this detritus, marked dermatitis of the skin will be observed, sometimes to the point of a weeping surface. The debris found in the canal has been variously described as having the appearance of wet blotting paper, charcoal dust or moldy bread.

Not all fungous infections of the aural canal have this classic picture. While many patients complain of insistent itching, aggravated at night, examination of the

ear may fail to reveal dermatitis or a collection of moist débris. There will be dryness of the lining membrane, absence of cerumen and mild desquamation of the epidermis. Persistent search for fungi in the desquamated flakes will frequently uncover one of the pathogenic fungi. Treatment directed toward the elimination of the offending organism will result in the relief of the pruritus and the return to normal of the epidermis.

The routine examination of material from an ear canal suspected of harboring fungi may be carried out and completed in the office. It will be necessary to have a supply of culture tubes containing Sabouraud's or Shaw's medium. These culture tubes when properly sealed will keep for an indefinite period and will not dry out. The essential for any culture medium for the growth of fungi is that the hydrogen ion concentration be kept at from 4 to 6. In such an acid medium the growth of bacteria is retarded and the common fungi grow in a luxuriant manner. The growth in most cases can be observed in from two to five days.

The débris in the canal can be examined microscopically as well as by culture. This examination can be carried out in the office. Some of the moist detritus or the branny flakes from the lining membrane of the canal are placed on a slide and mixed with a few drops of an alcoholic sodium sulfide solution; a cover glass is used and the specimen examined with the low power objective. The purpose of the sodium sulfide solution is to dissolve wax and epithelial débris and clear the specimen. Sodium hydroxide solution, which has been used, has been found to dissolve certain fungi.

Fresh material from an aural canal is best examined in the unstained state. Under certain conditions a stained specimen may be helpful, and then a 1 per cent solution of neutral red dye is used. Most of the budding fungi are gram positive.

To restate the routine that can be followed in the office: In microscopic examination of the wet specimen, a solution of sodium sulfide in alcohol and a low power objective are used. For culture, Sabouraud's or Shaw's agar having a hydrogen ion concentration of from 4 to 6 is inoculated and observed for three days at room temperature. Staining with 1 per cent solution of neutral red may be employed for the demonstration of mycelia.

A fungous infection of the external ear is not always a clearcut picture. In the case of an itching ear with a moist mass of discolored débris filling the canal, the diagnosis is simple, especially if the patient states that he has been treated by several otologists with but little relief and an early recurrence of symptoms. There is another type of condition, with a history of pruritus of the external ear, frequent collection of dry scales and sometimes the occurrence of fissures in the skin, which in the past has been designated eczema. It is not serious, and little is to be seen on examination. It is, however, of unbounded annoyance to the patient.

If one accepts the latest explanation of eczema, that it is a reaction of the skin to some foreign irritant, with dermatitis in one of its thousand phases resulting, a search for the irritant by means of the suggested routine will reveal in many cases that what has previously been classified as eczema is due to infestation with one of the pathogenic fungi. It is in these cases that the suggested routine examination at the office will be of value.

The treatment of fungous infections of the aural canal has included most of the antiseptic drugs in use during the past hundred years. The time-honored

mixture of salicylic acid in alcohol was the suggestion of Bezold, and the prestige of his name has carried authority for the treatment through all the standard textbooks up to the present time. The good results following the use of salicylic acid were due to its desquamating effect and not to a specific action by either salicylic acid or alcohol, neither of which is effective as a fungicide.

The present success in the treatment of otomycosis is due in a large measure to the work on this problem by Gill of San Antonio, Texas, and Searcy of Tuscaloosa, Ala. Entire credit is hereby given to these two workers for my method of therapy. Gill is to be thanked for our knowledge of the action of meta-cresyl acetate, a cresol derivative, better known under the trade name cresatin. This is an effective fungicide.

Searcy, working with McBurney at Tuscaloosa, studied the fungicidal effect of sixty-nine fungicidal agents in vitro and with a large number of these agents followed the effect in vivo. His conclusions, which I have followed gratefully, were that many of the fungicidal agents used in the past, particularly alcohol in all dilutions, had no effect on aspergilli and some of the other fungi found in cases of otomycosis.

The routine treatment that has been followed during the past year is a composite one made up from the methods suggested by both Gill and Searcy.

The canal is first cleared of débris by irrigation and then dried by means of a blast of warm air. It is then packed with absorbent cotton saturated with cresatin. The patient is directed to remove this packing the following morning. After the packing has been removed an attendant places six drops of 1 per cent thymol in 70 per cent alcohol in the canal, the patient lying with the affected ear uppermost and remaining in this position for five minutes. This treatment with thymol drops is repeated twice a day for five days, at the end of which time the patient returns to the office, always with the complaint that the drops burn severely. In the past a 2 per cent thymol solution was used, and the victims complained bitterly of the burning. At the suggestion of Searcy the concentration was reduced to 1 per cent, which was found equally effective and less irritating.

At the end of five days the canal will be found to be free from débris. There may be some evidence of dermatitis, with pruritus and pain. At this time a thymol iodide powder is prescribed to be blown into the canal twice a day for five days. This powder is most effective in relieving the pruritus and clearing up the dermatitis.

Of the other drugs used as fungicides, the most effective are the aromatic oils: oil of mustard, oil of cloves and oil of cinnamon, all closely related to the phenols and similar in action to thymol.

In all cases of fungous infection, whether localized or systemic, the iodides are of definite value. They have been used for so many years in the treatment of various obscure conditions that it is surprising that their action is not more clearly understood. It is possible that the action of the iodides is the same as that of the sulfanilamide group in fixing the toxin eliminated by bacteria or fungi. Potassium iodide has been found to be the most satisfactory form by which to obtain the effect of iodine. The initial dose of 15 grains (1 Gm.) a day is rapidly increased to 30 grains (2 Gm.) and is given for thirty days. When sodium iodide is used, 15 grains is given intravenously every three days.

To summarize the treatment of otomycosis: The canal is cleaned of debris and dried by means of a current of warm air. It is packed with cresatin for twelve hours. A solution of thymol in alcohol, 1 per cent strength, is used for a five minute period twice a day for five days. At the end of five days thymol iodide powder is dusted into the canal three times a day for three days. Potassium iodide is administered orally to the amount of 30 grains a day for thirty days.

With this routine otomycosis is cured in a short time and does not recur.

750 Main Street.

ABSTRACT OF DISCUSSION

DR. WILLIAM D. GILL, San Antonio, Texas: I believe that a person who is suffering from otomycosis can contaminate a pool and disseminate the infection. Not all individuals show the same degree of susceptibility to infection with the pathogenic fungi, and there is in some persons an apparent immunity to them; therefore they escape infection, while others are susceptible in the extreme and will be victims of a severe infection. To prevent the spread of mycotic ear infections in the swimming season, certain precautions should be observed. The reason for these precautions is more evident if one checks the bacterial content of the water in swimming pools at the peak load during their use. The American Public Health Association's recommended maximum count for safety is 200 bacteria in 1 cc. of water. In certain nonchlorinated pools the bacterial count has been checked under my supervision and found to be as high as 5,000 per cubic centimeter of water. That is nothing more than diluted sewage. The danger of bathing in such contaminated water should be evident to any one. Nor is bacterial contamination limited to fresh water pools, for salt water may be contaminated just as readily and, on bathing beaches where the water is more or less quiet and the inflow limited, contamination may be quite marked. Measures of importance in combating contamination of swimming pools comprise: 1. Inspection of the bathers before entering the pool to prevent introduction of pathogenic organisms. 2. A preliminary shower bath for all bathers. 3. Chlorinated foot bath before entering the pool. 4. Exclusion of all persons suffering from disease. The last mentioned regulation introduces a troublesome complication in pools supplied by waters supposed to possess medicinal virtues, for such pools are often used by persons with open lesions of the skin which they seek to heal by its aid. The measures directed to the pool proper are: 1. Chlorination of the intake water. 2. Fencing to prevent entrance of nonbathers to the immediate vicinity of the pool. 3. Limiting the number of bathers to prevent an overload on the capacity of the chlorinating measures. 4. Terracing about the pool to prevent contamination by surface water during rains. 5. An attendant or attendants sufficiently familiar with transmissible diseases to detect them in persons seeking the use of pools for bathing. After swimming, the use of 1:10,000 mercuric cyanide in 70 per cent alcohol in the ear is a valuable prophylactic measure against fungous infections. Ear stoppers are ineffective against mycotic infection. In the treatment of mycotic infections emphasis should be placed on the fact that certain patients may show an allergic reaction to some of the most efficient fungicides, such as thymol and the cresylic acid preparations.

DR. MILLARD F. ARBUCKLE, St. Louis: Dr. Whalen's paper is an important contribution to our knowledge of this difficult problem. As stated, many patients with otomycosis drift from one doctor to another because the diagnosis has not been established. This can be done with certainty, at least in ear lesions, only by microscopic study of a specimen from the ear, and this is comparatively simple. Otomycotic lesions usually remain fairly well localized, but apparently some varieties may be exceedingly deadly if introduced elsewhere. A fungous infection of the external canal may spread through a perforation into the middle ear cavity and occasionally may invade a "radical mastoid cavity" weeks or even months after healing. If there is an accumulation of desquamated epithelium, cerumen or moisture, putrefaction rapidly ensues. The skin flap may become excoriated to the point of actual ulceration, and unless one keeps the possibility of fungous infection in mind one is

likely to become discouraged with efforts to get a dry ear. If the fungus becomes implanted in an open wound near cartilage, the likelihood of loss of cartilage is greater than in ordinary wounds. I have seen cases of intractable and disabling headache apparently due to sensitivity to one or another type of mold. The majority of these came from the Ohio River Valley. The diagnosis was proved by exclusion of other possible causes, by sensitivity to mold and by change of habitat. In these cases there is no local lesion such as is seen in the ear. Dr. Whalen's suggested use of sodium sulfide has a rational basis.

THE ANTIDOTAL TREATMENT OF BARBITURATE INTOXICATION

REPORT OF TREATMENT WITH PICTOTOXIN IN SIX CASES

W. J. BLECKWENN, M.D.

AND

MABEL G. MASTEN, M.D.

MADISON, WIS.

As a chemical means of self destruction, the barbiturates lead the list, and with increasing lay knowledge of the rapid hypnotic effects of the shorter acting barbiturates they can be expected to rival barbitol and phenobarbital as the method of choice for those who seek permanent oblivion. Physicians must be alert to the signs of intoxication, particularly the recognition of barbiturate poisoning. In any case of poisoning, regardless of the chemical agent employed, it is imperative that an antidote be employed to counteract that part of the poison which has been absorbed.

The use of picrotoxin as an antidote is based on the work of Tatum and his co-workers,¹ who showed in the dog that 1 mg. of picrotoxin acts as an antidote for 35 mg. of amytal, 36 mg. of pernocton and 27.7 mg. of pentobarbital sodium. While from 2 to 4 mg. of picrotoxin per kilogram proved to be fatal for rabbits, when protected by adequate doses of barbital these animals tolerated from 20 to 40 mg. of picrotoxin per kilogram. As a result of this work Tatum urged its application in human poisoning. Since it is not possible in human beings to duplicate experimental methods used in animals, a series of clinical observations were made to determine the method and dosage necessary to act as an antidote for a known amount of barbiturate. The results of this study were reported at the annual meeting of the American Society for Pharmacology and Experimental Therapeutics in April 1937.² Briefly the method employed was as follows: With a 5 per cent solution of the various short acting barbiturates, the patient was narcotized to the point of corneal anesthesia. After an interval of ten minutes to make sure that the necessary depth of anesthesia had been established, picrotoxin in a 1:1,000 solution was injected at the rate of 1 cc. per minute. The return of the corneal reflex and the dilatation of the miotic pupil were warnings of approaching consciousness. A few milligrams more brought the patient to complete consciousness, which was maintained. If the picrotoxin

Read before the Chicago Neurological Society, March 17, 1938.
The Abbott Laboratories supplied picrotoxin in suitable form for use in this work.

From the Department of Neuro-Psychiatry of the University of Wisconsin Medical School.

1. Maloney, A. H.; Fitch, R. H., and Tatum, A. L.: Picrotoxin as an Antidote in Acute Poisoning by the Shorter Acting Barbiturates, *J. Pharmacol. & Exper. Therap.* 41: 465 (April) 1931. Maloney, A. H., and Tatum, A. L.: Picrotoxin as an Antidote in Acute Poisoning by the Shorter Acting Barbiturates, *ibid.* 44: 337 (March) 1932.
2. Bleckwenn, W. J.; Masten, Mabel G., and Tatum, A. L.: A Clinical Study of Picrotoxin-Barbiturate Antagonism, *Proc. Am. Soc. Pharm. & Exper. Therap.* 60: 99, 1937.

was injected too fast or when too much picrotoxin was administered, twitching of the lips; of the tongue and later of the extremities occurred, and on four occasions a generalized convulsion resulted from too rapid injection. From this work it was found that 1 mg. of picrotoxin was an antidote for approximately 30 to 40 mg. of pentobarbital sodium, sodium amylal or their thio derivatives. It was impossible to produce corneal anesthesia and narcosis with 2.5 Gm. of butylethylbarbituric acid and 1.5 Gm. of barbitol and phenobarbital intravenously. It was felt to be too hazardous to inject intravenously more of these longer acting barbiturates.

During the time these experiments were in progress, and since their completion, six patients with barbiturate poisoning from self-administered drugs used with suicidal intent have been treated with picrotoxin. These cases cannot be compared with the experimental cases, since the time which elapsed between the ingestion of the drug and the administration of picrotoxin was much greater, and other restorative drugs were used in some instances. However, they prove the usefulness of picrotoxin and illustrate the method of treatment in such cases.

REPORT OF CASES

CASE 1.—Mrs. S., aged 63, had been depressed for six years. Three years previously she had taken 50 grains (3.25 Gm.) of barbitol and recovered in ten days in the hospital. She was admitted to the Methodist Hospital³ May 18, 1936, at 8:20 a. m. in a comatose condition with slow stertorous respiration, a pulse rate of 92 and a blood pressure of 78 systolic, 58 diastolic. During the remainder of the day she was in coma and the systolic blood pressure remained below 80. She was given 11 grains (0.7 Gm.) of caffeine with sodium benzoate in two doses. Nine hours after admission, at which time no improvement could be detected, she was given a single dose of 15 mg. of picrotoxin, following which the blood pressure rose to 104 systolic, 70 diastolic. Fifteen minutes later an additional 9 mg. of picrotoxin was given. This was followed immediately by facial movements and incoherent muttering, and ten minutes later she asked for a bed pan, recognized her family and in reply to questions stated that she had taken eight 3 grain (0.2 Gm.) capsules of sodium amylal.

CASE 2.—E. C., a nurse aged 21, was conscious when picked up by the police ambulance but in deep coma on arrival at the Methodist Hospital at 1:15 a. m. July 25, 1936. From information supplied by her roommate, it was estimated that she had taken 75 grains (5 Gm.) of sodium amylal and 18 grains (1.16 Gm.) of pentobarbital sodium. She was given 39 mg. of picrotoxin in divided doses and 7½ grains (0.5 Gm.) of caffeine with sodium benzoate during the night. When seen in consultation at 10 a. m. the following day there were cyanosis, profound relaxation, absent reflexes, fixed eyeballs and small fixed pupils; the conjunctiva was covered with a sticky secretion and there was no reaction to any form of stimulation; the pulse rate was 120 and the blood pressure was 78 systolic, 56 diastolic. Oxygen through a nasopharyngeal catheter at the rate of 6 liters per minute was instituted. Between 10:20 a. m. and 7:50 p. m. 630 mg. of picrotoxin was given intravenously with short interruptions. A convulsion occurred in the morning after 180 mg. of picrotoxin had been given, two convulsions occurred an hour apart in the late afternoon and two occurred in the evening. The blood pressure was maintained close to 100 systolic; respiration was deeper and the pulse was stronger during the periods of picrotoxin administration.

During the following day treatment consisted of caffeine and coramine (pyridine betacarboxylic acid diethylamide), alternating at intervals of four hours, and diuresis with intravenous sucrose and parenteral fluids. The blood pressure remained above 100, on one occasion reaching 120 systolic, but the temperature mounted and the pulse and respiratory rates increased. Death occurred at 8:45 a. m. July 28, seventy-nine and one-half hours after admission.

This patient received a total of 669 mg. of picrotoxin. In the light of the experimental clinical studies and of subsequent experience in other cases of poisoning, it is thought that the occurrence of the first convulsion following the administration of 180 mg. of picrotoxin should have been the antidotal end point, since this dose experimentally counteracts roughly 100 grains (6.5 Gm.) of short acting barbiturates. Although this is probably the largest amount of picrotoxin administered to a human being, there was no evidence that any toxic or depressing effects of picrotoxin resulted. Without doubt, more picrotoxin was administered than was necessary to antagonize the barbiturate. The patient's failure to recover was attributed to the irreversible disturbance of cerebral cellular metabolism, which led to anoxia and edema and finally medullary death.

CASE 3.—E. J., a man aged 54, suffering from involutional depression, was discharged from Wisconsin General Hospital Oct. 6, 1936, with a prescription for forty 3 grain capsules of sodium amylal with the advice to take two at bedtime. He may have taken two capsules the night of discharge. His local physician was called at 7 a. m. October 8 because the patient could not be roused. He was seen in consultation at 8:30, at which time he was subcyanotic, his pulse rate was 104, his blood pressure 80 systolic, 60 diastolic, and his respiration was shallow. By 10 o'clock he had received 68 mg. of picrotoxin intravenously and had roused sufficiently to take 2 ounces (60 cc.) of magnesium sulfate. His blood pressure was 114 systolic, 72 diastolic at this time. He was drowsy the rest of the day. Oxygen was not used and he recovered promptly without pneumonia.

CASE 4.—L. B., a woman aged 23, was admitted to the university infirmary Oct. 14, 1936, twenty-four hours after she had taken 156 grains (10 Gm.) of sodium amylal. She was profoundly relaxed, although her neck was extended and rigid. The cornea was dry and covered with a tenacious exudate; the lips and the tongue were also covered with viscid mucoid material. The pupils were in mid-dilatation and did not react; the eyeballs were immobile and there were no reactions to any form of stimulation. The pulse rate was 144, the respiratory rate was 20 and shallow and the temperature was 102.4 F. There were red denuded areas on the inner surfaces of the thighs and the inner surfaces of the ankles. During the succeeding twenty-four hours, purplish bullous lesions developed over the hips, the inner surfaces of the knees and the outer surfaces of the feet. Oxygen by nasopharyngeal catheter and subcutaneous fluids were started immediately. One-half hour after the oxygen was started the pulse rate was 128, the respiration rate was 20 and labored owing to mucous obstruction, and the blood pressure was 90 systolic, 60 diastolic. Between 10:35 p. m. and 1:30 a. m., 148 mg. of picrotoxin was given intravenously. At the request of a member of the anesthesia department, who was assisting with oxygen therapy, metrazol was given rapidly, first 6 cc. and fifteen minutes later 12 cc. Twenty-five minutes after the second injection of metrazol the corneal reflexes were present and a convulsion ensued.

Because of the long interval that had elapsed before she was discovered, it was felt that cerebral edema and anoxia accounted for her condition rather than the presence of barbiturate. Therefore, following the convulsion after the injection of metrazol, no more picrotoxin was used. At that time the amount of sodium amylal was not known. An empty box in her bathrobe pocket identified the barbiturate. Treatment further consisted of 7½ grains of caffeine with sodium benzoate every four hours, dextrose intravenously, parenteral fluids, and sucrose. Good diuresis was secured. The bullous lesions became ulcers; the one over the left trochanter developed large proportions, uncovering bone and taking many months to heal. Recovery was never anticipated in this case even when the first signs of returning consciousness occurred. October 16 the temperature reached 105 F. (rectal), the pulse rate was 152 and the blood pressure was 90 systolic, 60 diastolic; at 3 p. m. that day the family was told that death was imminent. An hour

3. Members of the Jackson Clinic gave the authors the privilege of reporting cases 1 and 2.

later she moved her head and her arms; she coughed and moaned. At 7:15 she opened her eyes in response to her name. At 9:30 she was tossing about. The following morning, October 17, at 9 o'clock the temperature was 100 F., the pulse rate 96, the respiration rate 24 and the blood pressure 100 systolic, 70 diastolic. She was awake all night of the 17th and for several days could not retain food but was clear mentally. She remained very weak and November 3 walked very unsteadily. The tendon reflexes were reduced in the right leg and absent in the left. All the ulcers were anesthetic. She recovered completely and pneumonia did not develop.

The striking feature in this case is the rapid recovery in a ten hour period from what was regarded as a fulminating state; it emphasizes the need for unrelenting treatment of edema in cases in which a long interval has elapsed after the ingestion of the drug.

CASE 5.—Mrs. B., aged 30, was found unconscious at 1 a. m. Dec. 2, 1936. She had taken 80 grains (5.2 Gm.) of sodium amytal and 6 grains (0.4 Gm.) of phenobarbital about one and one-half hours previously. When admitted to St. Mary's Hospital she was in deep coma with a thin, rapid pulse and shallow respiration; all reflexes were absent. Following gastric lavage, picrotoxin was started, and in the ensuing three hours she received 60 mg. The injection was interrupted while additional picrotoxin was being secured from the Wisconsin General Hospital. During the interval 15 grains (1 Gm.) of caffeine with sodium benzoate was given intravenously. The return of the corneal reflex determined the end point of picrotoxin administration. It was possible to rouse the patient by painful stimuli, but when left undisturbed she returned to sleep. She was awake and clearly oriented the following morning. At 9:15 a. m. she had a chill, and at noon her temperature was 105.4 F., the pulse rate was 140, and the respiratory rate was 44. She recovered from lobar pneumonia and cystitis and was discharged twelve days after admission.

Twenty-three grains of sodium amytal was recovered from the stomach washings, which again emphasizes the importance of gastric lavage.

CASE 6.—J. F., a woman aged 24, was found unconscious a few hours after taking 120 grains (8 Gm.) of sodium amytal. She was admitted to the Madison General Hospital at 10:35 p. m., Dec. 18, 1937, and the hospital record shows that her respirations were slow and shallow and the pulse was rapid and weak. External heat was applied and the stomach washed with 6 quarts of 1:5,000 solution of potassium permanganate followed by clear water until the washings returned clear. Four ounces (120 cc.) of a saturated solution of magnesium sulfate was left in the stomach. As the stomach tube was removed respiration ceased and artificial respiration was administered until nasopharyngeal oxygen could be started and an airway inserted. Coramine and epinephrine were given. Respiration was soon established. A two quart enema was given and 10 per cent dextrose intravenously was started. The preceding treatment took place within one and one-half hours of admission and is given in detail because it seems admirable first aid.

During the night she was given, in addition to 1,000 cc. of 10 per cent dextrose, 1,000 cc. of Ringer's solution and 2,000 cc. of 5 per cent dextrose. She was seen in consultation the following morning at 11 o'clock, at which time she was still in deep coma, reflexes were absent, the temperature was 101 F. (rectal), the pulse rate was 116 and the respiratory rate was 30. Following the injection of 30 mg. of picrotoxin, the corneal reflexes returned and defensive movements were elicited on painful stimuli. During the afternoon 100 cc. of 50 per cent dextrose and 2,000 cc. of physiologic solution of sodium chloride were given. That evening she was very restless and oxygen was discontinued the following morning. She was discharged on the fifth day.

This case emphasizes the importance of elimination of the drug from the stomach and intestine, for, although ten hours had elapsed before picrotoxin was given, she responded promptly to a small dose. Since she had taken 30 grains (2 Gm.) more than the patient

who died, it is obvious that a large part must have been removed from the stomach.

COMMENT

Any patient found in deep coma with small fixed pupils, corneal anesthesia, low blood pressure, shallow respiration and fast weak pulse should suggest immediately the possibility of barbiturate poisoning. The first step should be the washing of the stomach, even if it is known that the drug was ingested many hours earlier. The action of the barbiturates is to diminish or halt peristalsis; hence it may be possible to recover the drug in the stomach after the normal emptying time. Sometimes bits of the blue or yellow capsules are still visible in the stomach contents, assisting in the identification of the drug. Since the drug may be absorbed any place in the gastrointestinal tract, rapid peristalsis and further elimination of the poison may be promoted by leaving 2 or 3 ounces of sodium phosphate in the stomach after the last washing. Since magnesium sulfate is a cerebral depressant and may be toxic to an impaired renal system, the propriety of its use is questioned.

To overcome the anoxia and cerebral anemia, continuous oxygen should be given, and to get it in contact with the lung alveoli the nasopharyngeal catheter method of Waters is preferred. Increased flow of mucus will necessitate frequent aspirations and may be assisted by an airway; sometimes an endotracheal tube may be needed. Since the drug is largely excreted through the kidneys, diuresis is promoted by parenteral fluids and sucrose. Dextrose is indicated to prevent acidosis if the attack is not brought to an immediate solution by the antidotal action of picrotoxin.

While administering the emergency treatment one should give picrotoxin in a 1:1,000 solution at the rate of 1 cc. per minute, watching the pupils and taking the corneal reflex at intervals. The first notable effect of picrotoxin will be an increase in the depth of respiration and a rise in the blood pressure. The pulse rate often improves in quality and becomes slower. The return of the pupillary and corneal reflexes, or twitching if the return of the reflexes is missed, is the signal that the convulsive stage is approaching. The patient who has not been unconscious long and who has taken a short acting barbiturate will be revived to complete consciousness. Others who show evidence of having passed from a deep anesthesia to a lighter plane after picrotoxin but who remain unconscious are in a safe stage, and unconsciousness is probably due to cerebral edema from which recovery may be hastened by diuresis.

In the case that terminated fatally, picrotoxin resulted in the return of corneal, pupillary light and swallowing reflexes as well as the improvement in the pulse, respiration and blood pressure. Within ten minutes after the discontinuation of picrotoxin, regression occurred. The resumption of picrotoxin again restored the reflexes mentioned and improved vital functions. In preface over a long period the patient was held at a pre-convulsive level with twitchings of the tongue, lips, head, eyes and extremities punctuated by the four convulsions mentioned when the drug was continued too rapidly after twitchings were observed. It therefore appears that picrotoxin stimulates the medullary and perhaps the hypothalamic centers even in those cases in which consciousness cannot be restored because of cortical anoxemia and edema.

The question may be raised as to what effect picrotoxin will have on a patient whose coma is due to some unknown drug. This is answered by consideration of

the method of administration of picrotoxin. The slow rate of 1 mg. per minute allows careful observation for stimulating effects, and it is always possible to stop the drug before the precipitation of a convulsion. Thus no harm is expected and improvement may occur as the result of stimulating the vegetative centers. The drug is known to protect animals against chloral hydrate and to revive animals in deep coma from paraldehyde and sodium bromide.⁴

As to the usefulness of picrotoxin in poisoning due to longer acting barbiturates, it has not been possible to induce deep narcosis safely in man, and a case of poisoning has not been presented as yet. There seems to be no reason why the technic employed in poisoning due to shorter acting barbiturates should not be used, although Maloney and Tatum¹ from their animal experiments recommend repeated small doses intravenously. Work to be reported on the comparative doses and effectiveness of various analeptics shows that picrotoxin is relatively slow in its initial action.

CONCLUSIONS

In six cases of barbiturate poisoning treated by picrotoxin a safe convenient method for the administration of picrotoxin was used.

Effective treatment of barbiturate poisoning emphasizes the following procedures: (a) gastric lavage and purgation, (b) continuous oxygen, (c) the administration of picrotoxin intravenously until the return of pupillary and corneal reflexes, (d) diuresis by parenteral fluids and intravenous sucrose and (e) the administration of dextrose to prevent acidosis.

UNUSUAL HYPERTENSIVE RENAL DISEASE

1. OCCLUSION OF RENAL ARTERIES
(GOLDBLATT HYPERTENSION)
2. ANOMALIES OF URINARY TRACT

LOUIS LEITER, M.D., Ph.D.

CHICAGO

The problem of the precise nature of the relationship between renal disease and arterial hypertension has been brought nearer to a satisfactory solution by the work of Goldblatt and his associates.² The purpose of the present discussion is twofold: (1) to report unique clinical analogies to experimental renal hypertension and (2) to illustrate other types of somewhat unusual organic kidney disease associated with hypertension. It is hoped that this paper will stimulate the publication of more extended clinical studies on the subject of renal hypertension. Conclusions drawn from animal experiments or even from excellent pathologic studies on hypertensive patients³ involve some danger of oversimplification of the problems of human hypertension.

ACUTE HYPERTENSION DUE TO THROMBO-ARTERITIS OBLITERANS OF SMALL RENAL ARTERIES

CASE 1.—History.—F. M., a man aged 40, was admitted in January 1933 complaining of headaches, pains in the legs, loss of weight and intermittent hiccups for two months and

fever for two weeks. The past history included treatment for syphilis since 1930 and a diagnosis of tabes dorsalis with tabetic bladder in 1931. Between July 1931 and August 1932 the systolic blood pressure varied from 104 to 128 mm., the diastolic from 64 to 86 mm. The heart and lungs were normal on fluoroscopic examination early in 1932. Except for some leukocytes, the specimens of urine were normal. The Wassermann reaction of the blood became negative with treatment. In November 1932 the systolic blood pressure was 146 mm., the diastolic 96. Examination revealed dyspnea, tachycardia, normal heart size and tones, normal optic fundi, a blood pressure of 178 mm. systolic and 114 mm. diastolic. The urine contained some albumin and many leukocytes (infected bladder). The urea clearance was from 90 to 110 per cent. A few days after admission severe hiccups, an attack of convulsions and brief coma



Fig. 1 (case 1).—Low power view, elastic tissue stain, showing focal fibrous intimal plaque in the large artery below, a recanalized thrombosed artery with eccentric lumen on the left, and almost complete obliteration of the small artery at the top. The veins are uninvolved. Note the atrophic parenchyma, with preserved glomeruli above and hypertrophied renal tissue below.

developed. Subsequently the systolic blood pressure ranged between 180 and 220 mm. and the diastolic between 110 and 136 mm. for about three weeks. Retinal hemorrhages and edema occurred. Death resulted in March 1933 from failure of the left ventricle and infected pulmonary infarcts. The clinical diagnosis was acute nonnephritic hypertension in view of the persistently normal renal function and the nonspecific urinary observations. The possibility of syphilitic vascular changes affecting the vasomotor centers was entertained. The pathologic appearances of the kidneys were a complete surprise.

Necropsy (Dr. Winters).—Postmortem examination revealed kidneys of normal size, weighing 280 Gm., but with irregular projections of hypertrophied cortical tissue separated by areas with indistinct markings. There was marked cystitis cystica but no significant change in the ureters or pelvis. The main renal arteries showed some atherosclerosis. The heart weighed 350 Gm. Tabes dorsalis and syphilitic cerebral endarteritis were

4. Quoted by Maloney, Fitch and Tatum.³
Read in part before the Central Society for Clinical Research, Chicago, Nov. 6, 1933.

From the Lasker Foundation for Medical Research and the Department of Medicine, the University of Chicago.

1. Goldblatt, R. M., and Rich, S. L.: *Pathogenesis of Hypertension*. V. The Due to Renal Ischemia. *Ann. Int. Med.* 11: 69-103 (July) 1937.

2. Moritz, Alan R., and Oldt, M. R.: Arteriolar Sclerosis in Hypertensive and Nonhypertensive Individuals. *Am. J. Path.* 13: 679-728 (Sept.) 1937.

observed but no mesaortitis. Histologically (L. L.) the kidneys showed wide areas of atrophic parenchyma alternating with normal but hypertrophied tissue. In the atrophic areas glomeruli were preserved though occasionally collapsed, tubules were in various stages of atrophy and the interstitial tissue and capillaries were prominent. There was some ascending infection, the boundary zone showing several large foci of mononuclear cells. Only a few glomeruli were hyalinized. The cause of the renal atrophy was found in the corresponding arcuate and interlobar arteries, some of which were completely occluded by dense fibrous or cellular intimal tissue, while others showed multiple recanalization or a single, eccentric, triangular lumen (figs. 1 and 2). The internal elastica was intact in some of these arteries, shredded or destroyed in others. The media was preserved or replaced by fibrous tissue. There was no



Fig. 2 (case 1).—Low power view of the renal cortex, elastic tissue stain, showing sector of collapsed tubules and less affected glomeruli corresponding to the thrombosed, recanalized artery in the lower right corner. The kidney tissue on each side of the ischemic area is functioning.

infiltration of the arterial wall by inflammatory cells, but there was often dense perivascular fibrosis. Phagocytes laden with old blood pigment were present in the vascularized intima of a few arteries or in the periadventitial connecting tissue. The major arterial branches showed fibrous plaques projecting focally into the lumen. The intralobular and afferent arterioles were normal. Except for some focal fibrous thickening of the intima, the veins were not affected. There was no indication of syphilitic phlebitis.³ Obliterative endarteritis was found also in the small arteries of the liver, pancreas, stomach, colon and testis, and strikingly in the capsule of the adrenal, as well as in the gland itself.

The association of organic renal vascular occlusion, hypertension and normal renal function is unique in clinical experience. In the case described the significant

feature is the exact knowledge of the duration of hypertension. Only four months elapsed between the first rise in blood pressure and the necropsy. The histologic changes in the kidneys and other organs, as well as the clinical data, are compatible with this duration. There was enough normal renal tissue to yield a normal urea clearance. There was obstruction of a sufficient number of small renal arteries to mimic the Goldblatt experimental hypertension. The patient's left ventricle could not cope with the sudden and sustained hypertension. It is noteworthy that there was no pathologic change in the region of the vasomotor centers (Dr. Percival Bailey) to explain the hypertension on the basis of a disturbance of the central nervous system. Nor was there sufficient pyelonephritis, secondary to the infected tabetic bladder, to produce renal vascular changes.⁴ The involvement of small arteries throughout the splanchnic area, including the adrenals, could scarcely be invoked to account for the hypertension. The conclusion seems inescapable that organic renal arterial obstruction was responsible for clinical hypertension without renal insufficiency.

The cause of the vascular occlusion in this patient is unknown. Although syphilis comes to mind first, no similar case has been found in a cursory review of the literature. The cases reported by Vollhard,⁵ Wohlwill³ and Rich⁶ represent typical syphilitic disease and bear no resemblance, clinically or pathologically, to the case under discussion. The absence of syphilitic phlebitis speaks strongly against a syphilitic origin of the renal endarteritis. The multiple distribution of the arterial lesions and their general histologic appearance are more in favor of organized thrombosis than of any other process, including periarteritis nodosa. Possibly intravenous antisyphilitic therapy may have been a factor in the multiple thrombosis, but there is no specific evidence. A visceral form of thrombo-angiitis obliterans has been described⁷ in association with the typical vascular changes in the extremities. The lesions are entirely different from those in case 1 and involve the veins as well as the arteries.

CHRONIC HYPERTENSION ASSOCIATED WITH ARTERIOSCLEROTIC OCCLUSION OF THE MAIN RENAL ARTERIES

CASE 2.—History.—H. P., a woman aged 46, was admitted in November 1931 complaining of an attack of severe headache, vomiting, blurred vision, convulsions and coma, which had occurred five weeks previously. The past history included headaches and nocturia for years, radiotherapy and blood transfusions for bleeding uterine fibroids in 1931, followed by injections of a bismuth compound for latent syphilis discovered at that time. The blood pressure in 1931 varied from 240 to 180 mm. systolic and from 160 to 88 mm. diastolic. The renal function was not estimated, but the urine showed only a trace of albumin. Examination showed marked retinal arteriosclerosis with hemorrhages and exudates, some cardiac enlargement, increased tendon reflexes on the right side and a blood pressure of 208 mm. systolic and 114 mm. diastolic. The urine pressure of 208 mm. systolic and 114 mm. diastolic. The urine was dilute and contained some albumin and leukocytes, and a few casts and erythrocytes. The hemoglobin content was 68 per cent. The urea clearance was 10 per cent and the blood urea nitrogen 85 mg. per hundred cubic centimeters. The patient died within a year as the result of increasing cardiac failure and uremia. The clinical diagnosis of chronic hyper-

4. Butler, Allan M.: Chronic Pyelonephritis and Arterial Hypertension, *J. Clin. Investigation* 16: 889-897 (Nov.) 1937.
5. Vollhard, Franz: *Handbuch der inneren Medizin*, Berlin, Jellinek, Springer, 1931, vol. 2, pt. 2, pp. 1541-1546.
6. Rich, A. R.: Pathology of Specific Nephritis Associated with Acquired Syphilis, *Bull. Johns Hopkins Hosp.* 53: 357-382 (June) 1932.
7. Jaeger, Ernst: Pathology of Thrombo-Angiitis Obliterans, *Vierteljahrsschr. f. path. Anat.* 284: 526-583, 1932.

3. Wohlwill, F.: Syphilitic Disease of the Kidney, *Zentralbl. f. inn. Med.* 47: 1066-1074 (Nov. 6) 1926.

tensive glomerulonephritis was based partly on a vague history suggestive of acute nephritis following influenza in 1918.

Necropsy (Dr. Cannon).—Postmortem examination disclosed extremely contracted kidneys, the right weighing 41 Gm., the left 22 Gm. The left renal artery was completely occluded within 1 cm. from the aorta by an arteriosclerotic plaque. The right renal artery was also markedly narrowed. The heart weighed 370 Gm. Cerebral arteriosclerosis and an organizing hemorrhage in the left putamen were also observed. Histologically (L. L.) the left kidney consisted merely of clumps or rows of hyalinized glomeruli and obstructed atrophic tubules in dense fibrous stroma. There was no evidence of inflammation except for slight cellular infiltration in the subepithelial tissue of the pelvis. The main renal arterial branches had an extremely thickened, cellular and fibro-elastic intima and a degenerated internal elastica. In the medium and smaller arteries there was in addition extensive elastoid degeneration, at times replacing the entire media (fig. 3). A new media was present inside the old in some arteries, with a new internal elastica just under the endothelium. The arterioles showed subendothelial hyperplasia but little hyalinization. The larger, right kidney consisted of islands of massively hypertrophied tubules connected with enlarged glomeruli. Some of the tufts were normal except for some diffuse thickening of the basement membrane, while others showed focal hyalinization, multiple adhesions, lipid degeneration and, rarely, acute hemorrhagic inflammation. Even in this kidney most of the parenchyma was fibrotic, and many tubules were obstructed. The arteries in general resembled those of the smaller kidney but did not exhibit the formation of "an artery within an artery." The veins in both kidneys were entirely normal.

The exact sequence of events in this case could not be determined because of the lack of necessary clinical data. Judging from the symptoms, the degree of retinal and cerebral arteriosclerosis and the small size of the kidneys, both hypertension and obstruction of the renal arteries must have been present for many years. The changes in some of the preserved glomeruli, though compatible with an old glomerulonephritis, could equally well have been due to secondary glomerulitis, which is common in contracting kidneys. At any rate, in this case, as in case 1, the anatomic basis of a Goldblatt type of hypertension was fully established in the arteriosclerotic occlusion of the main renal arteries. However, the process must have been very gradual, allowing for general adjustment. The etiologic role of syphilis was questionable because of the absence of active mesaortitis or syphilitic vascular lesions in other organs, the lack of involvement of the renal veins and the nonspecific nature of the fibrotic process in the kidneys. The peculiar elastoid degeneration of the arterial walls and the formation of a new media in the thickened intima, or "an artery within an artery," strikingly resembled the process found in the small intra-uterine and ovarian arteries after pregnancy and menstruation.⁸ They indicated that sufficient blood flow existed to furnish the stimulus for differentiation of the arterial mesenchyma in the narrowed channels.

CONGENITAL ASYMMETRICAL ATROPHY OF THE KIDNEYS AND HYPERTENSION

CASE 3.—History.—F. K., a man aged 29, was admitted in September 1934 complaining of dyspnea, swelling of the legs, vomiting and bleeding from the mouth and rectum for six weeks. The past history included albuminuria, discovered in 1929, frequent sore throat, bleeding hemorrhoids for three years, headaches in the past year and an abscess of the scalp four months previously. Examination revealed signs of cardiac and renal failure, a few retinal hemorrhages without arteriolar sclerosis and a blood pressure of from 200 to 170 mm. systolic and from 130 to 100 mm. diastolic. The urine was dilute and

contained a moderate amount of albumin, some leukocytes, occasional casts and rare erythrocytes. The hemoglobin content was 27 per cent. The urea clearance was 3 per cent, the blood urea nitrogen 178 mg. per hundred cubic centimeters. Terminally, uremic pericarditis and suppurative parotitis developed. The clinical diagnosis of possible congenital anomaly of the kidneys, such as hydronephrosis, with or without old pyelonephritis, was not checked by pyelograms because of the desperate condition of the patient.

Necropsy (Dr. Cannon).—Postmortem examination disclosed congenital (?) hydronephrosis and extreme atrophy of the left kidney (weight, 35 Gm.) and congenital stenosis of the lower end of the ureter. The right kidney was also abnormal; it had a dilated pelvis and weighed 100 Gm. The renal arteries were grossly normal. The heart weighed 560 Gm. Histologically (L. L.) the left kidney showed massive fibrosis, regions

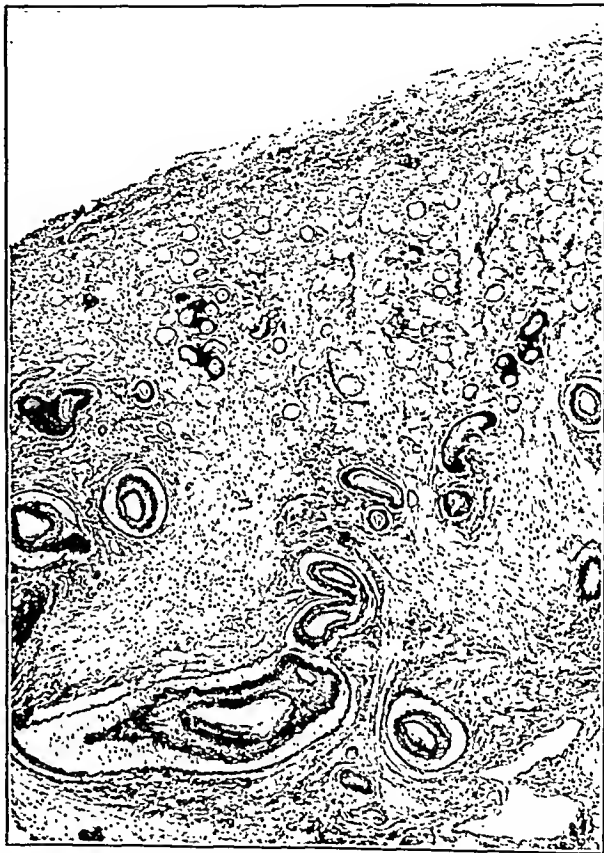


Fig. 3 (case 1).—Low power view of the smaller kidney, elastic tissue stain, showing marked intimal thickening in the large and medium arteries, elastoid degeneration of the wall in the small arteries and a new internal elastica subendothelially. Nearly all the glomeruli are hyalinized, and the cortical tubules have atrophied. The main renal artery of this kidney was occluded.

of obstructed tubules resembling thyroid alveoli, heavy infiltration of the boundary zone with mononuclear cells, signs of ascending infection in some of the large collecting ducts, and hyalinization of nearly all the glomeruli. The arteries and arterioles had thickened fibrous or slightly cellular intimas. The right kidney resembled the left in general but had prominent islands of hypertrophied and dilated tubules, less mononuclear cell infiltration and a larger number of preserved glomeruli, including some with huge patent tufts and thick fibrous capsules, others with multiple adhesions and partial hyalinization or lipid degeneration, and a few with acute focal inflammation.

In this case, illustrative of a considerable group of serious developmental or congenital anomalies of the urinary tract, the pathogenesis of hypertension was much more complicated than in cases 1 and 2. Is the hypertension to be related to obstruction of blood flow by the

⁸ Pankow: Uterine Arteriosclerosis, *Arch. f. Gynäk.* 50: 271-282, 1906. Sohma, M.: Effect of Age, Menstruation and Ovulation on Ovarian Arteries, *ibid.* 54: 377-422, 1905

contraction of fibrotic kidneys? On this assumption it is difficult to explain the absence of hypertension in at least 75 per cent of the children with renal dwarfism and renal rickets, associated with congenital dilatation of the urinary tract and severe fibrotic atrophy of the kidneys.⁹ On the other hand, marked hypertension seems to be characteristic in cases of unilateral hypoplasia and allied developmental anomalies of the kidneys, even in the absence of severe renal insufficiency.¹⁰ The role of chronic retention of waste products cannot be entirely dismissed as a factor in clinical hypertension in view of our present ignorance of the nature and activity of some of these substances.¹¹

It is also possible that pyelonephritis, a common complication, is a factor in the development of hypertension in certain patients with congenital disease of the urinary tract. The high incidence of hypertension reported by Longcope¹² in adults with old pyelonephritis justifies the belief that accurate clinical diagnosis will reveal a relatively large but hitherto neglected group of cases. The role of chronic pyelonephritis in producing hypertension in children has been well demonstrated by Butler.⁴ However, the mechanism by which the blood pressure is elevated is not definitely known. Prinzmetal and Friedman¹³ have made interesting observations on the increased pressor effects of extracts of human pyelonephritic kidneys. The exact significance of these observations cannot be evaluated at present. It is noteworthy that young adult patients with long-standing pyelonephritis and a very low level of renal function for years may show little or no elevation in blood pressure.¹⁴ However, in the last year or so of their life, severe hypertensive cardiovascular and retinal syndromes may develop in a rather malignant fashion. Recent studies by Peters and his associates¹⁵ indicate that pregnancy may precipitate the hypertensive phase of pyelonephritis, which, in turn, may express itself in the eclamptic syndrome. In spite of these interesting observations, there is still much to learn concerning the mechanism of hypertension in pyelonephritis.

SUMMARY AND CONCLUSIONS

The pathogenesis of hypertension in patients with ordinary essential hypertension or chronic glomerulonephritis is unknown. However, it is possible to explain the elevated blood pressure in selected unusual cases of organic kidney disease in the light of recent experimental work.

The clinical counterpart of the acute Goldblatt experimental hypertension is illustrated by a case of thrombo-arteritis obliterans of small renal arteries in a tabetic patient. Acute hypertension and failure of the left ventricle were present for several months without significant impairment of renal function.

In another case, chronic arteriosclerotic occlusion of the main renal arteries was associated with chronic hypertension, renal insufficiency, retinal arteriosclerosis

and contracted kidneys. Here, too, there is a close analogy to the Goldblatt experimental hypertension, with the added factor of excessive obstruction to renal blood flow and consequent atrophy of the parenchyma.

Certain congenital anomalies of the urinary tract are apparently regularly associated with hypertension, while other types show a much lower incidence. With both types the kidneys may be markedly contracted. The reasons for the presence or absence of hypertension are unknown.

Chronic pyelonephritis is commonly productive of hypertension. The exact mechanism is unclear. Careful clinical studies of the early stages of the disease in both children and adults are essential for the proper evaluation of the various factors involved in the relation between organic renal disease and hypertension.

CYSTICERCUS CELLULOSAE OF THE BRAIN

REPORT OF TWO AUTOPSIES

CLARENCE C. HARE, M.D.

NEW YORK

Cysticercus cellulosae, the larval form of *Taenia solium*, commonly known as the pork tapeworm, is rarely encountered infesting man. Modern meat inspection has enormously reduced its incidence in all civilized countries. Not only is it rare but its lesions are so distributed, and at times so few, that premortem diagnosis is often extremely difficult. The condition may be revealed only at the necropsy table.



Fig. 1 (case 1).—*Cysticercus* cyst in right parietal lobe.

The frequency with which cysticerci are found in the nervous system in those otherwise infested with the disease is reported variously by different authors. Africa and Cruz¹ quote Vosgien, who in reviewing 807 instances found that the nervous system was involved 330 times, or in 40 per cent. Dressel² found the brain affected seventy-two times in eighty-seven cases, or in 82 per cent.

The pathologic studies in these cases were made in the Department of Neuropathology of the Neurological Institute and the Department of Pathology, Columbia University. I am indebted to Dr. Abner Wolf for these studies.

1. Africa, L. M., and Cruz, J. Z. S.: *Cysticercus Cellulosae* in Man. *J. Philippine Islands M. A.* 7: 209-215 (June) 1927.
2. Dressel, J.: *Zur Statistik des Cysticercus Cellulosae*. Berlin. G. Schade, 1877.

9. Hamperl, H., and Wallis, K.: Renal Dwarfism With and Without Renal Rickets. *Ergebn. d. inn. Med. u. Kinderh.* 45: 589-642, 1933. Ellis, Arthur, and Evans, Horace: Renal Dwarfism. *Quart. J. Med.* 2: 231-254 (April) 1935.

10. Ask-Upmark, Erik: Juvenile Malignant Nephrosclerosis and Maldevelopment of the Kidneys. *Acta path. et microbiol. Scandinav.* 6: 383-442, 1929.

11. Harrison, T. R., and Mason, M. F.: Pathogenesis of the Uremic Syndrome. *Medicine* 1: 16-44 (Feb.) 1937.

12. Longcope, W. T.: Chronic Bilateral Pyelonephritis: Origin and Association with Hypertension. *Ann. Int. Med.* 11: 149-163 (July) 1937.

13. Prinzmetal, Myron, and Friedman, Ben: Pressor Effects of Kidney Extracts from Patients and Dogs with Hypertension. *Proc. Soc. Exper. Biol. & Med.* 35: 122-124 (Oct.) 1936.

14. Unpublished observations.

15. Peters, John P.: The Nature of the Toxemias of Pregnancy. *J. A. M. A.* 110: 329-331 (Jan. 29) 1938.

Henneberg³ states that in a series of 1,408 autopsies at the Charité in Berlin only three cases of cysticerci of the brain were discovered. The author found two cases in a large series of autopsies from the Presbyterian Hospital and Neurological Institute of New York.

Cysticerci are much more apt to occur in the brain than in the spinal cord, and more often in the leptomeninges than in the parenchyma. When present in the pia-arachnoid they are more likely to be at the base of the brain and in the sylvian fissures than over the convexity. Not infrequently they are found in the ventricular system and most often in the fourth ventricle, where they may be solitary. The usual thing is to find just a few in the leptomeninges, dead and partially calcified and with a thick fibrous capsule about them. They may vary in size from 1 to 2 mm. in diameter to 3 to 4 cm. when quite old. There may be many thousands of cysticerci, however, in the pia-arachnoid and cortex, as in the case of Preobrazhenski.⁴ At the base of the brain the cysticercus cysts may be thin walled and grouped in a grapelike cluster. When the parasites are young, during the first year or so, the cysts are thin walled. With advancing age the reaction to them becomes increasingly great, producing a heavy capsule and calcification. At the base of the brain this reaction may obscure the cysts externally and produce the appearance of a very heavy chronic leptomeningitis.

The localization of cysticerci in the ventricles is relatively frequent. Sato,⁵ who collected 128 cases of cysticercosis of the brain, found them to be present in the ventricles in forty-eight instances. In twenty-two of these there was a single cysticercus in the fourth ventricle as the only lesion. In about three fourths of the cases the cysticercus vesicles were attached to the ventricular wall. If alive, as they are in more than 80 per cent of the instances of ventricular infestation, their attachment is by delicate membranes and they have considerable mobility. When the parasite is dead, development of connective tissue capsule and glial reaction occurs, which immobilizes the lesion and makes its bulk larger.

Henneberg collected the reports of fifty-six cases of cysticerci in the fourth ventricle and found that they occurred more frequently in men (thirty-six) and that the average age of those affected was 35, from 20 to 50 years being the range. The average duration from the onset of symptoms of the central nervous system to death was nine months. Henneberg cited four cases in which the duration of the disease was prolonged: Sato's fourth case and the cases described by Hensen,⁶ von Czychlarz⁷ and Neisser.⁸ In these the cerebral symptoms began twenty, sixteen, five and four years, respectively, before death. The cases to be described here belong with those which showed a protracted course. The symptomatology is dependent on the attendant internal hydrocephalus, which may be intermittent.

Henneberg points out that cysticerci have been frequently described in the choroid plexus and that in this

manner they reach the ventricles. The flow of the cerebrospinal fluid is apt to carry them to the fourth ventricle, where the narrowness of the apertures, the foramina of Lushka and Magendi, traps them in that cavity.

It is my purpose in this contribution to report two additional cases of long-standing cysticercus infestation of the brain encountered at the Neurological Institute of New York.



Fig. 2 (case 1).—Cysticercus cyst in right occipital lobe.

REPORT OF CASES

CASE 1.—*Convulsive seizures, failing vision, headache, amenorrhea and personality changes. Bitemporal hemianopia, optic atrophy, diminished visual acuity and unequal pupils. Autopsy revealed large right temporal cyst and multiple small cysticercus cysts.*

History.—A. C., a woman aged 43, referred by Dr. P. M. Papoulacos of New York, was admitted to the Neurological Institute in the service of Dr. E. G. Zabriskie May 19, 1932. The patient was born in Greece and lived a part of her life in that country. She had been operated on by Dr. Harvey Cushing at the Peter Bent Brigham Hospital in 1931. Dr. Cushing supplied the following facts with regard to the history and physical examination and his observations on the operation.

The patient was admitted to the Peter Bent Brigham Hospital Oct. 14, 1931, with a history of five convulsive seizures during the preceding three years. During the previous year and a half the visual acuity had failed, more rapidly in the last eight months and more particularly in the right eye; she suffered from frontal headache, and the menses had ceased. During the year preceding her admission to the hospital there had been a definite change in personality. For six months she had been unable to read or write.

Examination.—There was a bilateral optic atrophy, more marked on the left, and a bitemporal hemianopia. The left pupil was larger than the right and the visual acuity on the left was 5/70 and on the right 10/100. She recognized and named letters and could spell her name. Mentally there was a definite lack of insight into her condition, a slight euphoria and slowing of the mental processes. Roentgenograms of the skull revealed a small area of calcification just above, lateral to and behind the right anterior clinoid process, which was suggestive of a craniopharyngioma. Ventriculograms were made and revealed marked dilatation of both lateral ventricles, which were displaced to the left of the midline. The right anterior horn was

3. Henneberg, R.: Die tierischen Parasiten des Zentralnervensystems, in Lewandowsky's Handbuch der Neurologie, Berlin, Julius Springer 3: 643, 1912.

4. Preobrazhenski, P. A.: Multiple Cysticercen des Zentralnervensystems und der Muskeln, J. neuropat. i psikiat. 4: 1068-1077, 1904.

5. Sato, T.: Ueber Cysticercen im Gehirn des Menschen, Deutsche Ztschr. f. Nervenh. 27: 22-44, 1904.

6. Hensen, H.: Ueber Cysticercen im vierten Ventrikel, Deutsches Arch. f. klin. Med. 64: 635-651, 1899.

7. von Czychlarz, E.: Ein Fall von Cysticercus im vierten Ventrikel, Wien. klin. Rundschau. 13: 652, 1899.

8. Neisser, Ernst: Demonstration im Wissenschaftl. Verein der Aerzte zu Stettin, Berl. klin. Wchnschr. 3: 1117, 1901.

CYSTICERCUS CELLULOSAE—HARE

JOUR. A. M. A.
Aug. 6, 1938

obliterated and the third ventricle was compressed downward and backward. These observations led to the suspicion of a large right frontal tumor (Dr. M. C. Sosman).

Dr. Cushing sent in the following brief report of his observations made on operation: "At operation a tense dura was disclosed and a large cyst was found in the right frontal lobe. No mural nodule was found in this cyst so that its precise nature remains unknown. I hoped that this woman might show improvement after evacuation of the cyst but there was practically none."

On admission to the Neurological Institute eight months later the following history was obtained: After her return home from the hospital the mental disturbances persisted; she complained frequently of headache and vertigo; she was incontinent of both urine and feces, was helpless and had to be fed. Vision was about the same as before the operation. Control of the sphincters was gradually regained. The decompression had bulged markedly from time to time.

The examination showed the following: The patient appeared to be cheerful; she talked volubly in Greek but poorly in

cholesterol crystals and only a few cells. The total protein content varied between 22 and 25 mg. per hundred cubic centimeters, and the globulin was normal and the serologic reaction was consistently negative. A search for parasites or ova was not made. Air was also injected. Roentgenograms showed that there was a large cyst in the right frontotemporoparietal region which communicated with the lateral ventricle. Both lateral ventricles were markedly dilated, although the left was not as large as the right. The area of calcification previously noted in the roentgenograms at the Peter Bent Brigham Hospital was present.

Other laboratory data, including blood counts and a search of the stools for ova, were negative.

Operation.—The patient was operated on by Dr. C. A. Elsberg, and the cyst in the right frontotemporal area was evacuated. A small tumor measuring about 1.5 by 0.5 cm. in diameter was exposed at the bottom of the cyst at the supposed mesial end of the petrous ridge of the temporal bone. This small tumor was pedunculated and removed without difficulty.

Following the operation the previously bulging decompression was much softer, and mentally the patient appeared much improved. She was soon able to be out of bed, walked about the ward without difficulty and took care of her physical needs. Seventeen days after the operation the decompression, instead of bulging outward, suddenly became sunken inward. An hour later she had a convulsive seizure, which was repeated frequently during the following twenty-four hours. In spite of treatment she became rapidly worse; the convulsions could not be controlled and stupor and death occurred on the following day.

Autopsy.—The scalp and skull showed evidence of the operative procedures described. The dura was adherent to the right frontoparietotemporal region of the cerebrum. The cerebral hemispheres were asymmetrical, the right bulging in the frontotemporal region. There were flattening of the gyri and narrowing of the sulci over the convexity, most marked on the right side. The pia was thin and translucent over the entire convexity except at the margins of the operative wound in the right temporal lobe leading into the cyst. Here it was slightly clouded. The pial vessels were moderately congested. On the base of the brain from the chiasm to the middle of the medulla the pia was markedly thickened and yellowish and completely obscured the markings of the stem in this area. The emergent cranial nerves were sheathed in the pial exudate. On the ventral surface of the anterior half of the right inferior frontal gyrus, the gyral markings were obliterated and the pia was thickened in an area approximately 2 cm. in diameter. In this zone there was a cyst 2 cm. in diameter which lay in a sulcus and indented the cortex. On the ventral surface of the left inferior temporal gyrus there was an area approximately 2 cm. in diameter projecting somewhat above the surrounding brain surface, over which the pia was slightly thickened and cloudy. This nodular projection was a brownish yellow and rather firm. On section it was found to be an encapsulated mass, the wall of which was very firm and fibrous, almost cartilaginous, enclosing yellow and gray granular material.

Somewhat anterior to the point of emergence of the left fifth nerve on the lateral surface of the pons there was a pedunculated mass covered by thickened pia, measuring 1.5 by 0.5 by 0.25 cm. It was soft and apparently attached by a narrow pedicle of pia to the stem. On section it was found to have a thin fibrous wall and to contain cream-colored cheesy material and one small gelatinous spherical mass 2 mm. in diameter. Scattered irregularly over the ventral surfaces of the frontal and temporal lobes bilaterally were many small circular yellowish raised lesions varying in size from 1 to 2 mm. in diameter. A few were found over the lateral surfaces of the inferior frontal gyri and posterior portions of the temporal lobes bilaterally. Three were present over the lateral surface of the left parietal lobe.

On section of the cerebrum, the lateral ventricles were found to be markedly dilated and the third ventricle moderately. The anterior half of the right lateral ventricle was one and a half times as large as the corresponding portion of the left. There was a communication 3 mm. in diameter between the cystic cavity on the under surface of the right frontal lobe and the right lateral ventricle.

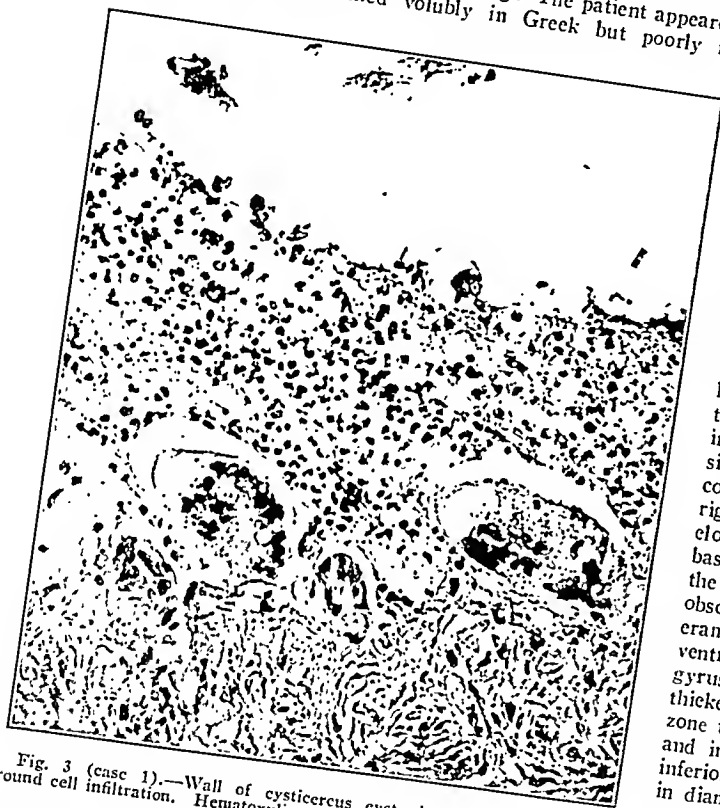


Fig. 3 (case 1).—Wall of cysticercus cyst showing giant cells and round cell infiltration. Hematoxylin-eosin stain; $\times 250$.

English. When attempting to speak English there was a definite anomia for simple objects with some perseveration, but according to her husband she named the same objects correctly and quickly in Greek. At 3 feet she counted fingers accurately with the right eye and read half inch numerals easily with the left eye. The only abnormalities in the cranial nerves were a slight left supranuclear facial weakness and a secondary optic atrophy. There was a moderate left hemiparesis with increased tendon reflexes, but no Babinski reflex and no sensory disturbances were present. Coordination was good. The decompression was bulging and tense.

Her mental state prior to operation was definitely abnormal. She was difficult to manage, often refused medication, talked to herself, urinated on the floor and on several occasions attempted to throw the bed pan at the nurses. She was often observed to reach into space as if she saw some object there. During the period of observation there were frequent changes in her mental condition.

In order to determine the nature and extent of the cyst, its fluid content was withdrawn and examined a number of times. The fluid was clear and colorless and varied in amount from 100 to 150 cc. Microscopically it contained fatty detritus, many

A large multilocular cystic cavity was present in the anterior portion of the right temporal lobe into which the operative wound led. The main chamber of the cavity was irregularly oval and measured 4 by 2.5 by 3 cm. It occupied the greater portion of the anterior two thirds of the right temporal lobe, excluding the hippocampal portion. Its lining was smooth, yellowish and not very vascular. It communicated by three semilunar openings with smaller chambers. One of these openings was present at the posterior angle of the main cavity, measured 1 cm. in width and led into a chamber 1 cm. in diameter which occupied a part of the posterior third of the middle and inferior temporal gyri. Just above this first opening was a projecting nodule, yellowish purple in color, 1.5 by 1 by 0.5 cm. in diameter, in the upper part of which a silver clip was present. A second smaller orifice, 4 mm. in diameter, was present in the floor of the main cavity and led into a third chamber 2 cm. in diameter, occupying most of the right temporal pole. There was no communication at any point with the dilated inferior horn of the lateral ventricle. There were firm adhesions in the sylvian fissure between the temporal lobe and the adjacent frontal and parietal lobes in this zone.

Varying-sized encapsulated masses, mostly spherical, were found scattered throughout both cerebral hemispheres (fig. 1). Most of them had a definite, glistening, fibrous wall and contained cream-colored and yellow granular friable material with chalky, lighter colored flecks in it. One was present in the white matter of the right frontal pole, 3 mm. in diameter and spherical. Two contiguous ones, 7 and 2 mm. in diameter, were found in the left inferior frontal gyrus and were surrounded by a narrow margin of softened brain. There was a ragged-walled, empty cavity, 1 cm. in diameter, on the medial aspect of the right superior frontal gyrus which presented some yellowish granular material in its wall. An irregular, yellowish, firm mass approximately 5 mm. in diameter was found in the pia just anterior to and above the optic chiasm, and a similar nodule, 6 by 2 by 2 mm., was seen in the anterior portion of the right superior temporal gyrus. The pia in the sylvian fissures was considerably thickened and contained many similar small yellowish nodules varying in size from 11 to 13 mm. in diameter. A lesion of the same type, 7 mm. in diameter, was present in the left putamen; another 3 mm. in diameter in the middle of the tail of the right caudate nucleus; one 9 mm. in diameter in the right postcentral gyrus, and a fourth 8 by 4 by 4 mm. in the pia in the depth of the left precentral sulcus. Three contiguous lesions were seen in the pia in the right hippocampal fissure posteriorly measuring 3, 3 and 5 mm. in diameter. These displaced the pineal to the left somewhat. A similar lesion 6 mm. in diameter was found in the white matter of the inferior portion of the right occipital lobe and another 2.5 mm. in diameter in the upper portion of the white matter of the right occipital pole (fig. 2). An encapsulated mass 7 by 3 by 3 mm. was found in a sulcus on the lateral surface of the upper portion of the left occipital pole.

Section of the cerebellum revealed a small grapelike cluster of clear-walled cysts in the upper right angle of the fourth ventricle in its midportion. These cysts contained clear, colorless fluid and varied from 1 to 4 mm. in diameter. The fourth ventricle and aqueduct of Sylvius were mildly dilated and their lining showed a regular, diffuse granular ependymitis. The latter was also present throughout the ependyma of the rest of the ventricular system.

Microscopically the cysts varied somewhat in their appearance, but their main features were similar. The majority had thick, collagenous, partially hyalinized connective tissue capsules in which few nuclei of connective tissue cells were present. The outer portion of the capsule in most cases was less compact, loose meshed and infiltrated by plasma cells, lymphocytes, large mononuclears and eosinophils. Occasionally foreign body giant cells were seen (fig. 3). This outer layer of the capsule was occasionally interwoven with a comparatively narrow surrounding band of glial fibers in the compressed adjacent brain. The lesions were cystic and within their lumens were varying amounts of amorphous, granular and hyaline material. In the latter many cholesterol clefts were seen. Embedded in the granular material were many small circular bodies, varying in diameter from one-half to six or eight times the size of an

erythrocyte. They were violet tinged and bluish in the hematoxylin-eosin stain and had a wide double contoured rim, a clear band and then one or more central, circular hollow or solid masses. In addition, the cysts contained strips of deeply eosinophilic material with scalloped edges having more form than the other contents. Frequently two were found lying parallel. Near their edges they were denser, while centrally they were foamy and contained many violet globules. These strips also contained varying sized masses of coarsely granular brownish yellow pigment. The cysts removed at the second operation were much like those found at autopsy except for the fact that the contents showed partial calcification. The large cyst in the right temporal lobe was lined by a thin layer of glial fibers. No other cysticerci beyond the one found at the second operation were found in the accessory chambers of this cavity.

The parasites in the lesions were markedly degenerated and were represented by the amorphous material (fig. 4). The cuticular portion of the cysticercus membrane was partially preserved in most cases and showed its typical scalloped edges.



Fig. 4 (case 1).—Cysticercus cyst containing degenerated parasite. Phosphotungstic acid stain reduced from a photomicrograph with a magnification of 12 diameters.

The pia about the base of the stem was markedly thickened and infiltrated by lymphocytes, plasma cells, eosinophils and large mononuclear cells. The ependyma everywhere showed a typical chronic granular ependymitis.

In the parenchyma the lesions were surrounded by a narrow band of gliosis, which was only a few millimeters in width in the majority of cases. The adjacent brain showed few if any degenerative changes. The pial lesions produced a thickening of that membrane which participated in the formation of the capsule.

The cysticerci had been widely disseminated in this case and were all apparently dead and degenerated. They were characteristically abundant in the pia-arachnoid at the base of the brain, where a marked inflammatory reaction was present. This change in the basilar leptomeninges was undoubtedly responsible for the internal hydrocephalus due to obstruction of the foramina of Magendie and Luschka. This is a common finding in cysticercus meningitis.

The cysts in the fourth ventricle were so small and in such a position as to make it unlikely that they had a hand in producing the dilatation of the ventricular system.

In only one place was there evidence of multiple cyst formation, the rest of the lesions being single. The grapelike cluster of cysts in the fourth ventricle represented such a formation. These have been described as *Cysticercus racemosus*, a special group of *Cysticercus cellulosae*.

CASE 2.—*Convulsive seizures of twenty years' duration, intermittent headache for four years and visual impairment for twelve*

months. Admitted to hospital with signs of meningitis. Death two days after admission to hospital. Autopsy revealed basilar meningitis and Cysticercus cellulosae in fourth ventricle.

History.—A man, aged 46, entered the Neurological Institute in the service of Dr. Frederick Tilney July 24, 1930. He was born in Italy, though we were unable to determine exactly how long he had lived in his native country.

Convulsive attacks began at the age of 26 and occurred three or four times a year, though they ceased four years prior to his admission to the hospital. The attacks were usually generalized and were accompanied by cyanosis,

frothing at the mouth and loss of consciousness. No cause for the convulsive attacks had been discovered.

The severe headaches of which the patient complained began after an appendectomy four years previously. The attacks of pain were chiefly frontal, had become progressively more severe and had occurred periodically three or four times a year. During the later attacks he often vomited. Drugs failed to give relief.

Failing vision had been noted during the year previous to his admission to the hospital. There was no diplopia and the visual defect was more in the nature of a blurring of images. Vertigo and transitory blindness occurred frequently during the later period of his illness.

Examination.—Physical examination was not very satisfactory because the patient had severe headache and looked and acted like one seriously ill. He was mentally clear but somewhat indifferent and drowsy. The temperature, pulse, respiration and blood pressure were normal. Station and gait could not be tested, visual acuity could not be determined and the results of the sensory examination were not reliable. Nonequilibrium coordination was not disturbed. Muscular power was generally diminished and the tendon reflexes were equally exaggerated on the two sides of the body. Pathologic skin reflexes could not be elicited. There was rigidity of the neck, and a bilateral Kernig sign was present. Both optic disks showed a marked papilledema. The right pupil measured 4 mm. in diameter and did not react to light or in accommodation; the left measured 2 mm., did not react in accommodation and reacted only sluggishly to light. As far as it was possible to examine them, the remaining cranial nerves did not show anything abnormal.

The blood count showed 4,440,000 red blood cells and 17,000 leukocytes, of which 85 per cent were polymorphonuclears and 15 per cent were lymphocytes. The blood chemistry was normal and the Wassermann reaction was negative. The spinal fluid was cloudy, under greatly increased pressure, and contained 6,500 white cells, of which 66 per cent were polymorphonuclears

and 34 per cent were lymphocytes. Organisms were not found on smears. The fluid removed two days later contained 1,200 cells. There were no organisms either on smear or on culture.

For two days after admission, the temperature and pulse remained normal although the meningeal signs were marked. On the third day he became stuporous; the temperature was elevated and respirations were stertorous. The pulse rate was 180 per minute, the face and neck were cyanotic and a divergent strabismus was present. The coma became deeper, the temperature mounted to 106 F. and he died of respiratory failure.

Autopsy.—The calvarium and dura showed no abnormalities. The pia-arachnoid over the convexity was edematous and the pial vessels were moderately well filled. The gyri were flattened and the sulci narrowed. The pia was thickened and a yellowish gray over the optic chiasm, infundibulum, interpeduncular fossa, cisterna magna and cerebellopontile angles. This change was present but less marked in the pia of the sylvian fissure and base of the pons and medulla.

On section of the brain there was seen to be a well marked internal hydrocephalus. The lumen of the fourth ventricle was found to be much reduced (fig. 5). There was a chronic ependymitis, especially over the roof, with a grayish layer of subependymal gliosis. In the posterior third of the ventricle was a small oval walled-off cavity measuring 1.5 by 0.8 by 0.6 cm.; it completely blocked the foramen of Magendie. Its wall was firm, translucent, grayish white, from 1 to 2 mm. in thickness and connected by a broad band of fibrous tissue to the thickened pia-arachnoid in the cisterna magna. This band passed through and plugged the foramen of Magendie. The cavity contained friable, grayish yellow material.

Microscopically the lesion of the capsule of the posterior fossa showed three layers (fig. 6). The outer band was fairly broad, loose meshed, quite vascular and congested and heavily infiltrated by lymphocytes, plasma cells, large mononuclears and some polymorphonuclears. In it small deposits of hemosiderin and some small fresh hemorrhages were found. Its connective tissue bundles were interwoven with the bands of glial fibers which encircled it. The layer internal to it was of about the same thickness and composed of heavy collagenous, partially hyalinized connective tissue in which few nuclei were present and in which the infiltration was slight. The third and inner-

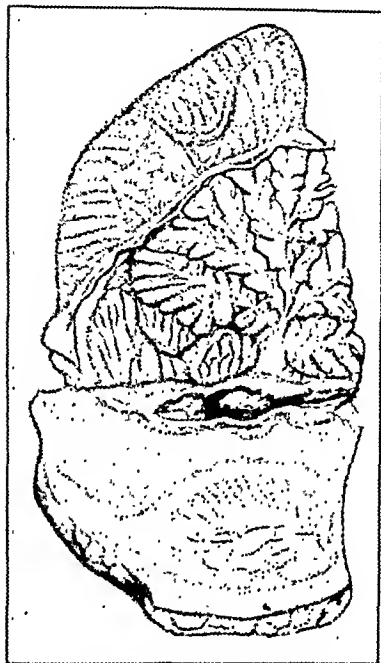


Fig. 5 (case 2).—Fibrotic cysticercus cyst at posterior end of fourth ventricle.



Fig. 6 (case 2).—Fibrous wall of cysticercus cyst. Hematoxylin-eosin stain; $\times 110$.

most layer was composed of elongated epithelioid elements growing at right angles to the capsule and moderate numbers of very large, irregularly shaped, multinucleated foreign body giant cells. In some areas this layer was frayed and composed of amorphous material in which cholesterol clefts were seen. In the lumen of the cavity were many large, varying-sized, irregular, eosinophilic, amorphous and partially hyalinized masses. Their edges were scalloped for the most part, and marginally they showed a rather homogeneous band which stained more intensely.

The infiltration of the outer layer of the capsule passed into the narrow zone of edema, degeneration and gliosis about the margins of the lesion in both the cerebellum and the stem. This was both diffuse and perivascular. External to both the cerebellar and stem sides of the cavity wall were a number of ependymal pockets lined by ependymal cells which varied from flat to cuboid types.

In the thickened band of tela choroidea passing from the cyst to the external pia-arachnoid in the cisterna magna there was a heavy exudate composed of lymphocytes, plasma cells, large mononuclears and some polymorphonuclears.

The pia over the base, in the cisterns about the stem and in the sylvian fissures was infiltrated by a similar exudate. In some areas the polymorphonuclears predominated. Many of the pial vessels showed infiltration of their walls. A number of the arteries showed considerable thickening of their walls, all three layers being involved. None of the vessels showed any evidence of cysticerci in their walls. Some of the vessels entering the pons from the pia showed a mild perivascular infiltration. The cranial nerves showed infiltration of their perineurial sheaths chiefly by round cells.

CONCLUSION

In one of the two cases of *Cysticercus cellulosae* infection of the brain reported, the parenchyma, meninges and fourth ventricle of the brain were involved, and in the second case there was a cysticercus of the fourth ventricle with an accompanying chronic basilar leptomeningitis.

706 West 168th Street.

CARCINOMA OF THE LUNG PRODUCING SYMPTOMS OF "SUPERIOR PULMONARY SULCUS TUMOR"

EVAN M. BARTON, M.D.

Assistant Attending Physician, Presbyterian Hospital
CHICAGO

The following report concerns a bronchiogenic carcinoma which arose in a pulmonary apex scarred by tuberculosis and which produced during its growth the group of symptoms and signs which have evoked comment in recent years under the designation of "superior pulmonary sulcus tumor."

This syndrome is not a clinical or pathologic entity, as originally suggested by Pancoast,¹ according to most recent observers.² It can be produced by various tumors invading the tissues near the apex of the lung, most commonly by bronchiogenic carcinomas. The term "superior pulmonary sulcus" itself, as indicating the site of origin, has also been cogently criticized³ and probably should be abandoned. The subject has been well reviewed by the authors cited. On the other hand, a more recent report by Kelman and Schlezinger,⁴ complete with autopsy, described an epithelial malignant tumor of uncertain origin which produced the characteristic complex of pain in the shoulder and arm, Horner's syndrome, erosion of the upper ribs and

neighboring vertebrae, atrophy of the arm and hand and a dense roentgen shadow in the region of the pulmonary apex. The lungs seem to have been excluded as the source, and the authors, in phrases reminiscent of Pancoast's¹ although with more supporting evidence, suggested "a clinical entity," a tumor near the inferior cervical sympathetic ganglion, "but the exact pathologic nature of which is undetermined."

While such reports are of great interest, it seems likely that the views of Fried² and others denying a narrow entity to the syndrome are still justified. The following case history lends support to this belief and to its corollary: that the most frequent cause of the syndrome is bronchiogenic cancer.

REPORT OF CASE

S. O., a man aged 50, married, Jewish, a tailor, entered the Presbyterian Hospital June 9, 1937, and died there August 16. His chief complaint was severe pain in the right shoulder, back and arm, present for sixteen months and associated with progressive general weakness. His family history was noncontributory. He was born in Russia; he had lived in the United States thirty years and in Chicago twenty-two. Ever since childhood he had had

a moderate cough productive of gray sputum, and the character of the cough had not changed during his recent illness. His appendix had been removed in 1910; there was an operation to correct strabismus in 1912; in 1929 he had consulted a doctor for transient pain in the right hip called "neuritis." Otherwise he had been well until January 1936, when he had an acute cold and cough, with a temperature up to 101 F. He was confined in bed for a week, and his doctor told him that he had pneumonia. He recovered from this illness and returned to work.



Fig. 1.—The chest about sixteen months after the onset of symptoms. The tumor casts a heavy shadow in the right apex and has eroded ribs and vertebrae.

Some time in February 1936 he began to experience fatigue, accompanied by pains high in the right side of the chest and back, which became increasingly severe, so that in July, five months later, he was obliged to stop work. In August he consulted a physician, who had a roentgenogram made of his chest. This "showed tuberculosis," and he was accordingly sent to the Winfield Sanatorium, where he remained five months. During this period tubercle bacilli were never demonstrated in his sputum. In October he spent a five day interlude at the Michael Reese Hospital for bronchoscopic examination, after which he was told that "nothing was found in the lungs." Further, on discharge from the sanatorium in January 1937 he was told that he had "no tuberculosis." Actually, as was learned later, the diagnosis was made of "probable carcinoma, right apex."

At home the pain persisted and became intractable. By February 1937, a year after onset, it had spread from the shoulder and back down the arm, increasing steadily in severity. The weight of bed covers on the arm and shoulder became intolerable. There were weakness and tremor of the right arm and hand; the patient was unable to use the hand to feed himself and was forced to learn to use the left hand for such purposes. At about this time he first noticed that he perspired only on the left side of the body.

Between January and June he lost 45 pounds (20 Kg.). A month or so before admission he spent a few days in another hospital, where iodized poppyseed oil was injected into the

From the Department of Medicine, Rush Medical College of the University of Chicago, and the Presbyterian Hospital.

1. Pancoast, H. K.: Superior Pulmonary Sulcus Tumor. Tumor Characterized by Pain, Horner's Syndrome, Destruction of Bone and Atrophy of Hand Muscles. *J. A. M. A.* 99: 1391 (Oct. 22) 1932.

2. Fried, B. M.: Bronchiogenic Cancer: Treatment with Roentgen Rays. *Am. J. Cancer* 20: 791 (April) 1934. Frost, T. T., and Wolpaw, S. E.: Intrathoracic Sympathoblastoma Producing the Symptomatology of a Superior Pulmonary Sulcus Tumor (Pancoast). *Am. J. Cancer* 26: 483 (March) 1936. Davidsohn, Israel, and Feldman, Louis: The So-Called Superior Pulmonary Sulcus Tumor. *Arch. Path.* 23: 906 (March) 1937. Browder, and DeVeer.

3. Browder, Jefferson, and DeVeer, J. A.: The Varied Basis for the Symptomatology Produced by Tumors in the Region of the Pulmonary Apex and Upper Mediastinum. *Am. J. Cancer* 24: 507 (July) 1935.

4. Kelman, Harold, and Schlezinger, N. S.: Tumor of the Superior Thoracic Inlet (Tumor of the Superior Pulmonary Sulcus): A Clinicopathologic Study. *Arch. Path.* 23: 383 (March) 1937.

dark red regions near the periphery. Beyond the lung the neoplastic tissue was more homogeneous, softer and quite friable (fig. 2).

Because of local extension of the tumor, and in spite of prolonged search, it was not possible to identify the right inferior cervical sympathetic ganglion or its connections.

The left lung weighed 670 Gm. In the upper lobe there were numerous minute, thin-walled cavities. Posteriorly there were localized, bright red, solid regions. Elsewhere, it was air containing.

The left adrenal gland weighed 23 Gm. because of a metastatic nodule in the superior pole, 3.5 by 3 cm. in cross section. The right adrenal gland weighed 5 Gm. Both glands appeared pale, as if deficient in lipoid material. Beneath the capsule of the left kidney were several gray-white tumor nodules from 2 to 3 mm. in diameter. Metastases were observed grossly in the lymph glands about the abdominal portion of the aorta.

The heart was firm in rigor mortis. It weighed 290 Gm. There were unusual opacity of the endocardium of the left auricle, slight sclerosis of the aortic leaflets and coronary arteries and moderate atheromatous changes in the aorta. No significant gross alterations were noted in other organs. The brain and spinal cord were not examined.

Histologic examination (Dr. C. W. Apfelbach) showed that in sections of the mass at the apex of the right lung there was an epithelial neoplasm irregularly disseminated in tissue that contained old black-pigmented scars and more recent necrotic fibrous tissue. The neoplasm was formed of epithelial cells having a marked tendency to assume cuboidal and columnar shape and to form glandlike structures (fig. 3). Although there were many solid masses, glandular spaces were sufficiently conspicuous to demonstrate that this was without question an adenocarcinoma. Many of the glandular spaces were crossed by a delicate network resembling mucus; in mucicarmine preparations some of the cells contained bright red masses, and in the places where a fine network was observed, much of it stained bright red. In sections of the mass that extended upward from the apex of the right lung, the carcinoma was more abundant and none of the scar tissue was seen that was present within the lung proper. In many places in the tumor there were numerous polymorphonuclear leukocytes about regions of necrosis. In other sections of lung there were large regions in which alveolar spaces were filled with edematous fluid and a few polymorphonuclear leukocytes; some of these infiltrations contained fibrin. No regions of active tuberculosis were found.

The metastasis in the left adrenal gland was similar histologically to the pulmonary neoplasm. In a section of a cervical lymph gland almost the entire node was replaced by carcinoma.

Sections of other organs examined were not remarkable.

The anatomic diagnosis was adenocarcinoma of the apex of the right lung, with local extension to the ribs, vertebrae and root of the neck; metastatic carcinoma of the ribs, left adrenal gland, left kidney and periaortic lymph glands; acute aspiration bronchopneumonia; bilateral apical, fibroid, pulmonary tuberculosis; emaciation; slight hydrothorax on the right side; slight ascites and anasarca; moderate arteriosclerosis; clubbed fingers and toes.

122 South Michigan Avenue.

The Iron Reserve in the Fetus.—Milk is what nature devised for the perfect food, but something called her away before the job was finished and she left iron out. It would take 11 pints a day of the very finest cow's milk to keep a man in his metal. It would require about 11 pints of human milk to supply all the iron a baby uses in one day. Nature tried to whitewash this oversight by storing up a reserve iron supply in the fetus. The newborn of all mammals have enough reserve iron for the first period of growth—about two months for the human being. Babies who receive nothing but milk for a period longer than a few months inevitably develop an anemia and are usually susceptible to disease and infections.—Furnas, C. C., and Furnas, S. M.: *Man, Bread and Destiny*, New York, Reynal & Hitchcock, 1937.

RECURRENT HYPERPYREXIA DUE TO SOLITARY TUBERCULOMA OF THE LIVER

WITH REVIEW OF THE LITERATURE

WALLACE E. HERRELL, M.D.

AND

WYATT C. SIMPSON, M.D.

Fellow in Surgery, the Mayo Foundation
ROCHESTER, MINN.

Recurrent hyperpyrexia of obscure origin or so-called recurrent idiopathic hyperpyrexia constitutes one of the most difficult problems confronting those concerned with diagnosis. In some circles the diagnosis of recurrent idiopathic hyperpyrexia is not considered justifiable. We are inclined to hold a similar view; namely, that such a diagnosis without qualification is not permissible. Often an example of so-called recurrent idiopathic hyperpyrexia is encountered which is relieved completely following dilation of a stenosed bronchus,



Fig. 1.—Section of specimen removed from the wall of the hepatic abscess. This shows typical tuberculous granulation tissue with a tubercle in the center. Hematoxylin and eosin. Slightly reduced from a photomicrograph with a magnification of 175 diameters.

removal of a focus of infection, treatment of an obscure abscess or removal of some etiologic factor which may be a more or less accidental discovery. Our purpose in this report is to describe a case which easily might continue to be regarded as recurrent idiopathic hyperpyrexia. The patient under consideration not only gave a rather unusual history but also harbored an exceedingly rare pathologic lesion. Therefore, a report of this case, together with a summary of the literature concerning similar cases, is presented.

REPORT OF CASE

A man aged 45, of Turkish extraction, who had lived in America since the age of 25, was seen for the first time at the Mayo Clinic Sept. 30, 1937. Except for an attack of pneumonia, from which he recovered uneventfully, he had enjoyed excellent health during his entire life until 1931, six years before coming to the clinic. This illness had been characterized by episodes of chills followed by fever often as high as 103 and 104 F. and lasting for two to three days and recurring every two to three weeks. These spells varied somewhat in intensity from time to time. There was only one other symptom associated with these illnesses and this was characterized by a more or less prodromal episode of aching pain between the scapulae, sometimes becoming severe. This pain

From the Division of Medicine, the Mayo Clinic (Dr. Herrell).

would last for twenty-four hours preceding the onset of hyperpyrexia. There were no symptoms associated with the cardiorespiratory, gastrointestinal or urinary systems. Other than moderate prostration during and following these attacks there were no other significant features associated with these bouts. Usually he would return to his work after the fever disappeared; the duration of the whole episode was usually from two to three days. He was able to retain his job as a hotel night clerk for the entire period of six years, during which his weight had declined from 185 to 136 pounds (from 84 to 62 Kg.). The only treatment which he had received prior to his visit here in an attempt to cure this condition was abdominal exploration and appendectomy in 1931. Other than this, the only therapy had been medical measures to combat hyperpyrexia during these attacks.

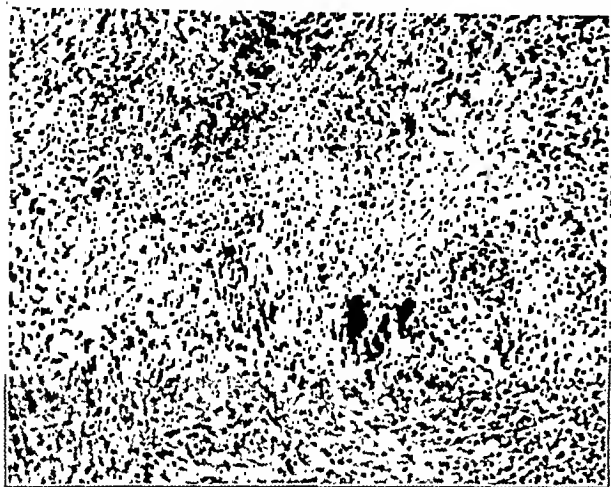


Fig. 2.—Section of portion of liver involved in the abscess. The left upper part of the section shows necrosis and the left lower part shows a typical tubercle with giant cells. Hematoxylin and eosin. Slightly reduced from a photomicrograph with a magnification of 175 diameters.

His physical examination was striking only in that there was a complete lack of any definite positive signs other than a mild degree of malnutrition. Routine laboratory observations were as follows: The urine contained a slight trace of albumin on two different occasions. The value for hemoglobin was 12.7 Gm. per hundred cubic centimeters; erythrocytes numbered 4,840,000 and leukocytes 7,000 per cubic millimeter of blood. The sedimentation rate, interestingly enough, was only 27 mm. in one hour. The flocculation test for syphilis gave negative results. Examination of the stools revealed no parasites or ova. Study of stereoscopic roentgenograms of the thorax was reported as giving negative results. In view of these somewhat negative results, roentgenologic examination of the kidneys and urinary bladder was performed and gave negative results except for some slight hypertrophic changes in the lumbosacral portion of the spine. Subsequent to this, intravenous urography was performed and reported as giving negative results. In view of the fact that, occasionally, the pain between the scapulae radiated into the right upper portion of the abdomen, a roentgenologic study of the gallbladder was carried out and was reported as giving evidence of a normally functioning gallbladder. Having somewhat exhausted our diagnostic aids, we felt justified in advising exploration of the abdomen and, accordingly, this was done by Dr. C. W. Mayo on Oct. 6, 1937.

The entire abdomen was explored but the only demonstrable pathologic change concerned the right lobe of the liver. The appendix had been removed previously and there was no evidence of a lesion of the bowel or peritoneum. All other abdominal viscera except the liver appeared normal. The right lobe of the liver contained what appeared to be an inflammatory mass about the size of a small grapefruit situated just to the right of the gallbladder. This mass involved the upper and lower parts of the right lobe but did not extend below the surface of the liver and, hence, it was not palpable on physical examination. On palpation the lesion was hard and woody; in

fact, at first appearance, carcinoma was suspected. A specimen was removed for microscopic study from a point where the peritoneum was attached to the area. A small amount of thick pus and much necrotic tissue were encountered. Some of this pus was taken for culture. This material showed no evidence of amebas and the brain broth and blood agar cultures showed no growth of organisms. In addition to the biopsy from the surface of this lesion, an additional piece of tissue was removed from the liver, which formed the wall of this abscess. The pathologists reported that both specimens removed for biopsy contained definite lesions of tuberculosis. Photomicrographs of both specimens are shown in figures 1 and 2.

In view of these facts the wound was closed without drainage and nothing further was done surgically at that time. The patient's postoperative course was characterized, at first, by considerable pain in the region of the right scapula similar to that complaint which usually preceded his previous bouts of hyperpyrexia. This pain was most severe on the tenth postoperative day, when his temperature rose to 101 F. This soon subsided and he progressed very well. He was dismissed from the clinic a month after his operation and was still having attacks of pain such as he had complained of before operation, but these attacks were much less severe. He went then to Arizona for a period of rest and general medical care. In a communication from the patient four months after operation he reported that he was feeling much better, was gaining strength and, although he had experienced an occasional attack of pain between the scapulae associated with a little fever, these episodes were becoming much less severe than they were before operation. There was still a slight serous drainage from the abdominal incision but, other than that, he had no complaints.

REVIEW OF LITERATURE

A review of the literature in search for cases similar to the one reported here is of interest in that only two such cases have been described previously. A report of a similar case in which solitary tuberculoma was found in the liver was made by Mayo Robson¹ in 1895. In that case the lesion was said to have been "virtually shelled out of the liver substance" with subsequent recovery of the patient. Another similar case was mentioned by Weiss² in 1935. However, he gave no detailed observations and one has merely to accept the diagnosis. The third case of this type we are adding to the literature at this time. Several other such cases probably exist; however, they have not been placed in the literature. One specimen of solitary tuberculoma of the liver is said to be in the pathologic museum of the University of Manitoba in Winnipeg, Canada, one other in the Museum of the Royal Infirmary at Sheffield, England, and a third, according to Rolleston and McNee,³ in the pathologic museum of the University of Birmingham, England.

COMMENT

Needless to say, perhaps the most frequent form of solitary abscess of the liver is that due to *Endamoeba histolytica*. The next but by no means frequent form of solitary abscess of the liver is that secondary to acute pyogenic infection within the abdomen. The rarest form of solitary abscess of the liver, on the other hand, as well as the rarest form of solitary tuberculosis, is tuberculous abscess of the liver. A few features of this case, therefore, are worthy of comment. The most significant feature, of course, is its rarity as indicated by a review of the literature. It is further noteworthy that this patient harbored no other demonstrable lesion of tuberculosis as far as could be deter-

1. Robson, A. W. M.: *Tubercular Disease of the Liver*, Tr. Clin. Soc. London 28: 83-85, 1895.

2. Weiss, Samuel: *Diseases of the Liver, Gallbladder Ducts and Pancreas*, New York, P. B. Hoeber, Inc., 1935, p. 566.

3. Rolleston, Humphry, and McNee, J. W.: *Diseases of the Liver, Gallbladder and Bile-Ducts*, London, Macmillan & Co., 1929, p. 379.

mined by thorough laboratory studies and subsequent abdominal exploration. The type of pain of which this patient complained, namely, pain situated between the scapulae, so often encountered in association with disease of the liver and gallbladder, is interesting. It is conjecturable that this represents the same reference of pain associated with lesions in the region of the gallbladder. Lastly, this case illustrates the type of lesion that may produce the symptoms which mimic so-called recurrent idiopathic hyperpyrexia.

CONCLUSION

We are adding to the literature at this time the report of a case which we believe represents the third report of a case of solitary tuberculous (tuberculous abscess) occurring in the liver.

THE CORPUS LUTEUM HORMONE IN EARLY PREGNANCY

REPORT OF A CASE IN WHICH THERE WAS
EARLY REMOVAL OF THE COR-
PUS LUTEUM

HOWARD W. JONES, M.D.

AND

PAUL G. WEIL, M.D.

BALTIMORE

Up to the present time the assay of progesterone from blood, urine and even corpus luteum itself has revealed only minute amounts of this hormone. In 1929 Marrian¹ isolated from urine a physiologically inactive substance which was identified by Butenandt² in 1930 and called by him pregnanediol. However, it was not until 1936 that Venning and Browne³ recognized this substance as an excretion product of progesterone. Using a gravimetric method involving the determination of sodium pregnanediol glucuronide, in which form pregnanediol is excreted, these investigators have measured the pregnanediol excretion in the normal menstrual cycle and in pregnancy. Their results are expressed in milligrams of pregnanediol excreted in twenty-four hours. In ten patients with normal menstruation they found that sodium pregnanediol glucuronide appeared in the urine only in the luteal phase of the cycle, i. e., within twenty-four to forty-eight hours after ovulation, and was then excreted continuously for a certain period, and that from one to three days after its disappearance from the urine menstrual bleeding began.

The period of excretion of the compound was found to be from three to twelve days and the amount of the compound, for an entire cycle, from 3 to 54 mg. In nine cases of normal pregnancy, up to the sixtieth day counting from the first day of the last menstrual period, Browne, Henry and Venning⁴ found from 4 to 10 mg. during twenty-four hours. From this level, which is comparable to that in normal menstruation, the rate of excretion begins to rise, reaching 40 mg. by the

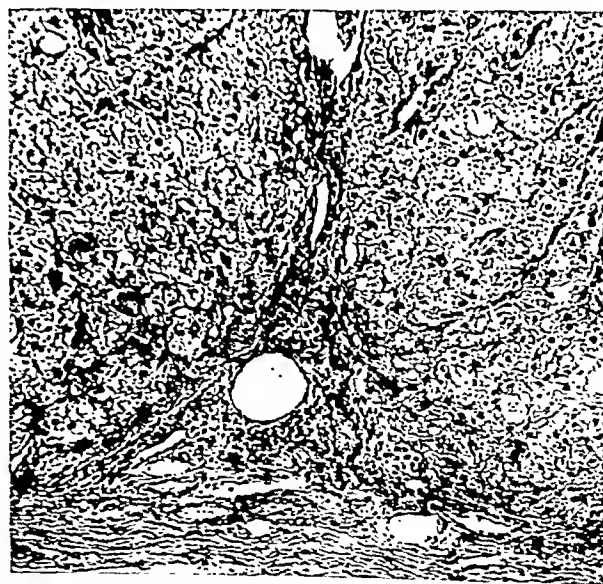
one hundred and fiftieth day. The peak of excretion is reached in the eighth month, when in two cases 80 and 73 mg. in twenty-four hours was excreted. Within twenty-four hours of delivery the compound completely disappears from the urine.

Using the gravimetric method of Venning,⁵ we have studied the excretion of pregnanediol in a case of early pregnancy in which the corpus luteum of pregnancy was removed fifty-eight days after the last menstrual period. The results, expressed in milligrams of pregnanediol in twenty-four, thirty-six or forty-eight hours, are given in the report of the case. The forty-eight hour specimens represent the pooled excretion for two days when the anticipated amount of pregnanediol was small. Determinations for the free form of pregnanediol did not reveal any of that substance.

REPORT OF CASE

C. H. H., a primipara aged 23, was admitted to the Church Home and Infirmary Oct. 27, 1937, as a private patient of Dr. Guy L. Hunner, who gave us his permission to report this case. The patient had been under treatment in July 1937 for ureteral stricture. Menstrual periods had always been regular. The last menstrual period occurred September 1-4. Except as already noted, the patient had always felt well until one month prior to admission, when sharp pains began in the lower part of the abdomen, on the right side and through the rectum. General physical examination was negative. Pelvic examination revealed a cystic mass in the right adnexal region. The uterus was not thought to be enlarged. The mass was thought to be a cystic tumor of the ovary, but the possibility of an ectopic pregnancy was seriously considered.

Operation was performed October 28. Dr. Hunner's notes are as follows: "We were surprised to find that the uterus



The corpus luteum of pregnancy fifty-eight days after the last menstrual period.

was large, soft and deeply congested, apparently containing a typical two months pregnancy. On lifting up the right adnexal mass, it was found to be about the size of a goose egg and to be cystic, slightly irregular in outline and rather firm feeling because of the thickened cyst wall. The cyst was enucleated from the ovary, leaving the ovary about two-thirds normal size. Nothing in the left ovary to suggest a corpus luteum of pregnancy, so it is probable that the corpus is incorporated in the cystic mass."

5. Venning, E. M.: A Gravimetric Method for the Determination of Pregnanediol Sodium Glucuronide, *J. Biochem.* 119: 473 (July) 1937.

In part from the Department of Surgery of the Johns Hopkins University School of Medicine and Hospital.

1. Marrian, G. F.: Chemistry of Oestrin: Preparation from Urine and Separation from Unidentified Alcohol, *Biochem. J.* 23: 1090, 1929.

2. Butenandt, A.: Ueber das Pregnandiol, einen neuen Abkömmling aus Schwangeren-Harn. Ber. d. Deutsch. chem. Gesellsch. 63: 659, 1930.

3. Venning, E. M., and Browne, J. S. L.: The Urinary Excretion of Sodium Pregnanediol Glucuronide in the Human Menstrual Cycle, *Endocrinology* 21: 711 (Nov.) 1937.

4. Browne, J. S. L.; Henry, J. S., and Venning, E. M.: The Corpus Luteum Hormone in Pregnancy, *J. Clin. Investigation* 16: 675 (May) 1937.

The patient recovered promptly from the operation and was discharged from the hospital November 17. She was delivered of a normal living child on June 27, 1938.

On gross pathologic examination the specimen was that of a thin walled fluctuant cystic mass from the ovary measuring 6 by 4 by 3 cm. The walls were thin, although there was slight thickening along one side, in which the tissue was bright yellow. The lining of the cyst was quite smooth and glistening. It was filled with clear yellow fluid.

On microscopic pathologic examination the lutein cells appeared normal. The paralutein cells filled in the folds of the lutein tissue in a normal manner. The inner border of the lutein tissue, i. e., the lining of the cyst, was composed of a moderately thick layer of rather acellular connective tissue, rather typical of corpus luteum cysts.

Immediately after operation twenty-four hour specimens of urine were collected for pregnanediol determination, as shown in the table.

CORPUS LUTEUM AND EARLY PREGNANCY

Fraenkel,⁶ many years ago, first suggested the importance of corpus luteum in nidation as a result of experimental work on rabbits. This work has been confirmed and extended by Corner⁷ and others. Corner in 1928, using rabbits, found that if bilateral oophorectomy was done about fourteen to eighteen hours after mating the ova would develop to the early blastocyst stage but that the endometrium would not undergo proliferation nor-

gesterone to early pregnancy. He found that abortion could be induced by hypophysectomy as effectively as by castration and that progesterone would prevent this.

Snyder⁹ likewise showed the importance of corpora lutea in the pregnant rabbit by the induction of ovulation late in pregnancy by means of the injection of pregnant urine extract, so that there was a fresh set of corpora lutea at term. Under these conditions, normal parturition was never observed, pregnancy being uniformly prolonged.

After the twentieth day, pregnancy is usually not interrupted in the rabbit by castration. One might therefore infer that after a certain period the secretion of corpus luteum is no longer needed to maintain pregnancy or that this secretion is formed by some other organ. There is a remarkable species variation in this. Thus, in the rat, Dr. Carl G. Hartman states that it is not possible to remove the ovaries at any period in pregnancy without abortion. The critical time in the human being is not known with certainty, although there are many cases recorded in the literature of the early removal of the corpus luteum without abortion.

In 1916 De Lee¹⁰ reported two cases of removal of the corpus luteum, both followed by abortion. Influenced by the work of Fraenkel on the rabbit, De Lee transplanted portions of the corpus luteum into both broad ligaments in an unsuccessful attempt to preserve the pregnancy.

In 1926 Ask-Upmark¹¹ contested Fraenkel's opinion of the importance of the corpus luteum in early pregnancy by the publication of a series of fifty-one cases in women from whom the corpus luteum of pregnancy was removed, all of these during the first two months. Of these only seventeen aborted. He concluded that there was no proof that the corpus luteum was necessary in early pregnancy and furthermore, from the cases he recorded, he thought that there was positive evidence that it was not needed. He made the mistake of thinking that this refuted the work of Fraenkel but neglected to consider species variation or the possibility that in the human being this function of the corpus luteum might be taken over by another organ.

In 1927 Pratt¹² reported the removal of a corpus luteum on the twentieth and on the thirty-first day after the last menstruation, without abortion.

Douglass¹³ and Corbet¹⁴ also have reported early removal of the corpus luteum without abortion. In the former case the pregnancy was of four weeks and, in the latter, forty-two days had elapsed since the last period.

On the other hand, Wilson¹⁵ has recently reported five cases of removal of the corpus luteum of pregnancy from the fifth week to the third month. In all these cases abortion resulted. This clearly indicates that abortion may follow abdominal operation, but whether the removal of the corpus luteum is the important factor is certainly not clear. We have frequently demon-

Determinations of Pregnanediol

Date	Specimen	Mg. of Pregnanediol per Specimen	Mg. of Pregnanediol in 24 Hours
10/30/37	24 hr.	15.08	15.05
10/31/37	24 hr.	3.00	3.00
11/ 3/37	48 hr.	0.00	0.00
11/ 4/37			
11/ 5/37	48 hr.	0.00	0.00
11/ 6/37			
11/ 7/37	48 hr.	0.00	0.00
11/ 8/37			
11/ 9/37	48 hr.	0.00	0.00
11/10/37			
11/11/37	36 hr.	trace	trace
11/12/37			
11/12/37	36 hr.	5.88	3.92
11/13/37			
11/14/37	36 hr.	9.66	6.44
11/15/37			
11/15/37	36 hr.	10.44	6.96
11/16/37			
1/14/38	24 hr.	26.4	26.4

mally characteristic of early pregnancy and that the blastocyst would die soon after entering the uterine cavity. He further showed that a progesterational change in the endometrium could be brought about in adult castrated female rabbits by the injection of a corpus luteum extract and demonstrated that, by using this extract in rabbits deprived of both ovaries at the eighteenth hour of pregnancy, the embryos would survive and normal implantation would occur. Extracts of follicular fluid and of human placenta did not give similar results. Thus it seems that the evidence is now complete to show that the corpus luteum of the rabbit secretes a hormone which is necessary for the early development of the free blastocyst and for the progesterational proliferation of the endometrium necessary for implantation.

Robson⁸ has recently reported work on the rabbit demonstrating still further the importance of pro-

6. Fraenkel, L.: Die Funktion des Corpus Luteum, Arch. f. Gynäk. 63: 438, 1903.
7. Corner, G. W.: The Effect of Very Early Ablation of the Corpus Luteum upon Embryo and Uterus, Am. J. Physiol. 86: 74 (Aug.) 1928.
Corner, G. W., and Allen, W. M.: Production of a Special Uterine Reaction (Progesterational Proliferation) by Extracts of the Corpus Luteum, ibid. 88: 326 (March 3) 1929; Normal Growth and Implantation After Very Early Ablation of the Ovaries, Under the Influence of Extracts of the Corpus Luteum, ibid. 88: 340 (March) 1929.
8. Robson, J. M.: Maintenance of Pregnancy and of the Luteal Function in the Hypophysectomized Rabbit, Am. J. Physiol. 96: 145 (July) 1937.

9. Snyder, F. F.: The Prolongation of Pregnancy and Complications of Parturition in the Rabbit Following Induction of Ovulation Near Term, Bull. Johns Hopkins Hosp. 54: 1 (Jan.) 1934.
10. De Lee, J. B.: Autotransplantation of the Corpus Luteum, Surg., Gynec. & Obst. 22: 80 (Jan.) 1916.
11. Ask-Upmark, M. E.: Le corps jaune est-il nécessaire pour l'accroissement physiologique de la gravité humaine? Acta obst. et gynec. Scandinav. 5: 211, 1926.
12. Pratt, J. P.: Corpus Luteum and Its Relation to Menstruation and Pregnancy, Endocrinology 11: 195 (May-June) 1927.
13. Douglass, M.: Persistence of Pregnancy After Excision of Corpus Luteum in Early Weeks, Surg., Gynec. & Obst. 52: 52 (Jan.) 1931.
14. Corbet, R. M.: A Case of the Removal of the Corpus Luteum of Pregnancy with Persistence of the Pregnancy, Irish J. M. Sc., April 1932, pp. 520-521.
15. Wilson, K. M.: Pregnancy Complicated by Ovarian and Parovarian Tumors, Am. J. Obst. & Gynec. 34: 977 (Dec.) 1937.

strated that abdominal operation during the early weeks of pregnancy, when it involves appendectomy, myomectomy or the removal of an ovarian cyst not involving the corpus luteum, usually is not followed by abortion.

COMMENT

The case herein reported is of extraordinary interest in that it touches on this relation of the corpus luteum to early pregnancy. It seems clear that in some species there is a critical point in time after which the corpus luteum can be removed without abortion. Up to this point the corpus luteum or progesterone is necessary for the continuation of the pregnancy. After this critical point, either the corpus luteum secretion is no longer necessary or the secretion is made by another organ. However, in the human being it is known that there are large amounts of pregnanediol, and therefore progesterone, all through pregnancy. Its discovery after the removal of the corpus luteum of pregnancy, as in one case recorded by Browne, Henry and Venning¹⁶ and in the case reported in this paper, would seem to clinch the fact that progesterone is produced late in pregnancy by some other organ than the corpus luteum. The fact that pregnanediol disappears from the urine within twenty-four to forty-eight hours of delivery would suggest that the site of its production is the placenta.

On the other hand, we have found that in the case we have reported, no pregnanediol was present in the urine for about twelve days after the removal of the corpus luteum. It then reappeared in increasing amounts. This would indicate that in the human being pregnancy can survive after the withdrawal of progesterone, or that it can survive on amounts too minute to be determined by the method employed.

Experimental work on the rabbit would certainly suggest the latter possibility as the correct one and therefore our interpretation of the course of events would be that progesterone is produced early in pregnancy chiefly by the corpus luteum and that this is supplemented later by a supply from the placenta. It is probable that the corpus luteum can be removed without untoward effects on the pregnancy after the placenta has begun its production of progesterone and that the beginning of its production varies from case to case. In the case we have reported, it is probable that the corpus luteum was removed at just about the time the placenta began its production of progesterone.

In this connection it is interesting to note that during pregnancy the maximum excretion of gonadotropic substance, as reported by Browne and Venning¹⁶ and by Evans,¹⁷ occurs at about the sixtieth day, or at about the time we have found that the placental production of progesterone begins. It may be that the tremendous excretion of gonadotropic substance represents the stimulus that inaugurates the placental production of progesterone. However, this hypothesis lacks experimental proof and we can only note that the peak of excretion of gonadotropic substance is associated with the appearance of placental progesterone.

SUMMARY

1. In a case in which the corpus luteum of pregnancy was removed on the fifty-eighth day after the last menstrual period, abortion did not take place. Follow-

ing this operation, we have determined the daily urine content of pregnanediol, an excretion product of progesterone.

2. Progesterone is probably produced by the placenta, beginning, in this case at least, at about the end of the second month.

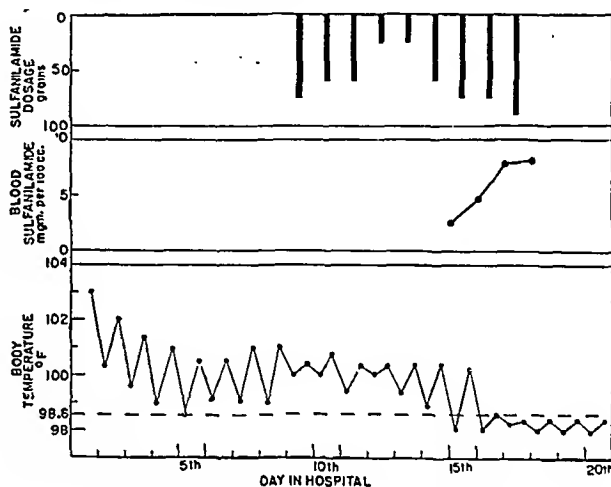
222 Augusta Avenue—Johns Hopkins' Hospital.

Clinical Notes, Suggestions and New Instruments

RECOVERY OF A PATIENT WITH UNDULANT FEVER TREATED WITH SULFANILAMIDE

HERRMAN L. BLUMGART, M.D., BOSTON

My purpose in this communication is to describe the rapid recovery of a patient with unquestionable undulant fever after the administration of sulfanilamide. The obstinacy with which this disease resists treatment, the tendency to relapse and the debilitating consequences of this infection are well recognized. The recovery in the case reported here and the occasional similar recoveries recorded in Europe following the use of sulfanilamide in undulant fever merit attention.



Temperature curve, sulfanilamide dosage and concentration of sulfanilamide in the blood in case of undulant fever here reported.

REPORT OF CASE 1

A man aged 33, a meat packer, felt perfectly well until three weeks before admission, when he experienced malaise, anorexia and fever ranging from 99 to 102 F. On several occasions he experienced chills lasting from fifteen to twenty minutes and profuse perspiration. During the three weeks before admission he suffered increasing weakness and noted that the rise in temperature occurred every evening. When I saw the patient he appeared exhausted, torpid and flushed but in no apparent pain.

Physical examination was otherwise negative except for enlargement of the spleen, which was tender and palpable 2 cm. below the costal margin. It was smooth and firm in consistency. The temperature on admission was 103 F., and the heart rate was 84 per minute. Respirations were 20 per minute. Examination of the urine was negative. The red blood cell count and hemoglobin percentage were normal. The white blood cell count was 5,900 per cubic millimeter, of which 52 per cent were polymorphonuclear cells with 7 band forms; 41 per cent were lymphocytes, 4 per cent were large mononuclear cells and 3 per cent were eosinophils. The heterophile agglutination test was negative; as were the agglutination tests for typhoid and paratyphoid A and B infections. Cultures of the stool and urine failed to yield any pathogenic organisms. The agglutination test for undulant fever

16. Browne, J. S., L., and Venning, E. M.: Excretion of Gonadotropic Substances in the Urine During Pregnancy, *Lancet* 2:1507 (Dec. 26) 1936.

17. Evans, H. M., Kohls, C. L., and Wonder, D. H.: Gonadotropic Hormone in the Blood and Urine of Early Pregnancy, *J. A. M. A.* 108:287 (Jan. 23) 1937.

From the Medical Service of Beth Israel Hospital and the Department of Medicine, Harvard Medical School.

1. Dr. Edward Kaplan gave the author the opportunity to study this case.

was positive in a dilution of 1:400 but was not carried through higher dilutions. Repetition of these tests on the succeeding days gave the same results except that the agglutination for undulant fever was positive through a dilution of 1:3,600. During the first week of the patient's stay in the hospital, the temperature varied from 98.6 to 99.4 F. in the morning and ranged to from 101 to 105 F. in the evening. The patient showed increasing prostration. Three blood cultures taken during this time showed the presence of *Brucella abortus*.² Organisms obtained from the cultures were later agglutinated by the patient's serum.

On the ninth day in the hospital sulfanilamide therapy was instituted, 75 grains (5 Gm.) being given orally in six divided doses, as shown in the accompanying chart. A daily dose of 60 grains (4 Gm.) in divided doses was given on the tenth and eleventh days. The temperature was unaffected. The skin and mucous membranes appeared somewhat bluish and the patient was slightly nauseated. On the two succeeding days the daily dosage was reduced to 25 grains (1.6 Gm.). The nausea disappeared. Since the clinical course had not been affected by these five days of sulfanilamide therapy, the drug was continued in increased dosage. Daily measurements of sulfanilamide in the blood were made and blood samples were

discharged from the hospital was negative for *Brucella abortus*. The red blood cell count and hemoglobin concentration were normal. The white blood cell count was 5,800, of which 66 per cent were polymorphonuclear cells, 26 per cent lymphocytes, 5 per cent large mononuclear cells and 3 per cent eosinophils.

During the six months since discharge from the hospital the patient has experienced no fever or other symptoms of undulant fever, has returned to work and feels entirely well. Physical examination is negative except for the spleen, the nontender edge of which is palpable just below the left costal margin. Examination of the blood and urine is negative except for the persistence of a positive agglutination reaction for undulant fever through a dilution of 1:1,200.

COMMENT

The diagnosis of undulant fever in the case here presented was based on the clinical appearance, the positive agglutination tests and the recovery of the organisms of *Brucella abortus* from the blood. The source of the infection is somewhat uncertain. It seems probable that the patient became inoculated by handling infected meat at his place of business. He stated that his skin was occasionally scratched by spicules of bone as he lifted or carried meat.

Summary of Reports in Literature to March 1938 on Effectiveness of Treatment of Undulant Fever with Sulfanilamide or Its Derivatives

Author	Number of Cases	Agglutination Titer	Blood Culture	Duration of Illness Before Treatment, Weeks	Duration of Treatment with Sulfanilamide or Its Derivatives, Days	Time of Disappearance of Fever After Institution of Sulfanilamide, Days	Period of Freedom from Symptoms to Time of Report of Various Authors, Months
Grouès*.....	2	0	0	?	26	20	2+
		<i>Brucella melitensis</i> 1:400	0	2	26	20	2+
Thévenet.....	1	<i>Brucella melitensis</i> 1:600	0	3	70	44	?
Berger.....	1	"Bang-Bazillen" 1:2,500	0	25	36	12	.4
Suchler.....	1	+	0	5	7	7	1+
Béthoux et al.....	1	<i>Brucella melitensis</i> 1:1,200	+	4	30	26	...
Ahringsmann.....	2	<i>Br. abortus</i> 1:400	0	6	28	7	3
		<i>Br. abortus</i> 1:2,500	0	5	20	4	4
Lloyd.....	1	<i>Br. abortus</i> 1:12,500	0	1	3	9	1
Richardson.....	2	<i>Br. abortus</i> 1:1,500	0	1	11	8	4+†
		0	0	29	9	6	2+
Fennels.....	2	<i>Br. abortus</i> 1:500	+	7	6	7	6
		<i>Br. abortus</i> 1:1,600	0	5	5	5	4

* In addition to these two cases Grouès reports good results in eight cases from combined treatment with vaccine and sulfanilamide. This author also refers to an unpublished good result attained by Coronat, a colleague, with sulfanilamide in one case of undulant fever.
† One relapse four weeks after first attack promptly responded to sulfanilamide.

examined spectroscopically for methemoglobin and sulphemoglobin (fig. 1). A fourth blood culture on the thirteenth day was positive for *Brucella* organisms.

On the fourteenth day, 60 grains of sulfanilamide was given; the concentration of sulfanilamide ("free form") in the blood on the following morning was only 2.5 mg. per hundred cubic centimeters. Seventy-five grains was given on the fifteenth day. The patient's temperature was not influenced, but the patient noted subjective improvement. The concentration of sulfanilamide in the blood increased to 4.5 mg. The dosage on the sixteenth day was maintained at 75 grains despite marked bluish discoloration of the skin and mucous membranes. A sample of oxygenated blood taken at this time was dark; spectroscopic examination of the sample revealed, however, neither methemoglobin nor sulphemoglobin. The temperature, which had risen every day to more than 100 F., remained normal on this day, and the patient showed definite clinical improvement. The concentration of sulfanilamide in the blood was 7.7 mg. per hundred cubic centimeters. Ninety grains (6 Gm.) was given on the seventeenth day. The temperature continued to remain normal and the concentration of sulfanilamide in the blood was 8 mg. per hundred cubic centimeters. During these last four days the patient did not experience gastrointestinal distress. Sulfanilamide therapy was discontinued, the temperature remained normal and the patient improved rapidly and was discharged from the hospital four days later. The cyanosis due to sulfanilamide had completely disappeared within two days of cessation of medication. A blood culture taken two days before the patient was

The relatively abrupt termination of fever and prostration in undulant fever following sulfanilamide cannot, in an individual case, be ascribed with certainty to the chemotherapeutic action of the drug. However, striking recoveries following the use of this drug have been reported to date by nine authors³ in thirteen cases in Europe as summarized in the accompanying table. It is of interest to note that in the majority of the well studied cases in the literature, as well as in this case, clinical recovery occurred only after from four to nine days of sulfanilamide therapy. Blood cultures were taken in only two of the cases previously reported in which sulfanilamide was administered. In one of these cases the blood was not reexamined after treatment. In the case studied by Béthoux and his associates⁴ cultures of the blood were taken one week after the

3. These authors and works include:
Grouès, Pierre: Sur quelques cas de méliococcie traités par le rubiazol seul ou associé à des agents thérapeutiques spécifiques de l'infection, Lyon méd. 158: 615 (Nov. 29) 1936.
Thévenet, Y.: Un cas de méliococcie traitée par le rubiazol (per os): Terminaison favorable relativement rapide de la maladie, Lyon méd. 158: 668 (Dec. 13) 1936.
Berger, W., and Schnetz, H.: Ein Behandlungserfolg bei Morbus Bang mit Prontosil, Med. Klin. 33: 594 (April 30) 1937.
Suchler, W.: Zur Behandlung der Bangschen Krankheit, Fortschr. d. Therap. 13: 305 (May) 1937.
Béthoux, Gourdon and Rochedix.⁴
Ahringsmann, H.: Heilung der Bangschen Krankheit durch Prontosil, München. med. Wchnschr. 84: 1778 (Nov. 5) 1937.
Lloyd, J. H.: Sulfonamide-P in *Brucella Abortus* Infection, Brit. M. J. 1: 145 (Jan. 15) 1938.
Richardson, L. A.: Infection with *Brucella Abortus* Treated with Prontosil, Lancet 1: 495 (Feb. 26) 1938.
Francis, A. E.: Sulfanilamide in the Treatment of Undulant Fever, Lancet 1: 496 (Feb. 26) 1938.
4. Béthoux, L.; Gour
par le chlorhydrate de
sistance des germes dans le sang, Paris 52: 678 (May 24) 1937.

2. Throughout this communication the term *Brucella abortus* is used, although the necessarily detailed tests to differentiate between the different *Brucella* organisms were not made.

patient became free from fever and symptoms and were positive. In the case reported here the blood culture was negative three days after subsidence of fever.

The dosage of sulfanilamide was chosen in this case empirically on the basis of dosage suggested by Marshall⁵ in the treatment of hemolytic streptococcus infections. The dosage employed in undulant fever by others has been less than the maximum daily dosages used in my case.

SUMMARY

1. Rapid recovery in a case of undulant fever followed treatment with sulfanilamide.
2. The diagnosis in this case was proved by positive serum agglutinations and blood cultures. After clinical recovery the organisms could not be cultured from the blood.
3. The apparently good therapeutic results in the present case and in the cases reported in the literature suggest that sulfanilamide should be given further trial in the treatment of undulant fever.

330 Brookline Avenue.

AGRANULOCYTOSIS FOLLOWING THE INGESTION
OF CAUSALIN

HENRY JACKSON JR., M.D., BOSTON

Agranulocytosis has followed the administration of aminopyrine, dinitrophenol, organic arsenicals, gold salts and sulfanilamide. The serious nature of this disease makes it imperative that no drug of this sort be administered unless there is urgent need and proper indication. When such chemicals are given, the physician should be constantly on the watch for the development of leukopenia.

Two cases of agranulocytosis have recently been seen in which the etiologic agent appears to have been causalin, a drug made up of approximately equal parts of aminopyrine and hydroxyquinoline and widely advertised for rheumatism.

CASE 1.—N. S., a white woman, aged 67, single, admitted to the Fourth Medical Service at the Boston City Hospital Nov. 17, 1937, had for two years had recurring attacks of arthritis in her fingers and ankles. For a year she had had intermittent pain referable to both maxillary sinuses. During the month prior to her admission she had taken three tablets of causalin a day.

One week before entrance she was seized with a sore throat of such severity that she was unable to swallow. The sore throat continued, fever developed and she became increasingly toxic.

Her past history was irrelevant.

On entrance to the hospital, she was acutely ill with a temperature of 102.4 F., her pulse was 120 and the respirations were 30. Physical examination was essentially negative except for the palate and fauces, which were red and dry and partially covered with a whitish membrane. There were no enlarged lymph nodes. At the bases of both lungs were many fine crackling rales and slight dullness.

The white blood cell count on entrance was 1,200 per cubic millimeter, and a differential count showed 4 per cent polymorphonuclear neutrophils, 84 per cent lymphocytes and 12 per cent stem cells. The red blood cell count was 3.3 million per cubic millimeter, the hemoglobin 59 per cent. The platelets were normal. She was given pentnucleotide in full doses (40 cc. daily) but the blood picture remained essentially the same. The temperature remained elevated and the pulse rose to 150. She became progressively more drowsy and died November 20, sixty hours after her admission. Permission for postmortem examination was not obtained.

CASE 2.—A. M., a single woman, white, seen in consultation with Dr. Howard Root at the Palmer Memorial Hospital, Dec. 2, 1937, had for two years had intermittent attacks of arthritis in the hands and wrists, for which she had received physical therapy and "serum" treatments, with some improvement.

During the three weeks prior to her admission to the hospital, she had taken more than 200 tablets of causalin. Ten days

before admission she noticed a small ulcer on her tongue; this was treated with silver nitrate. The ulcer, however, continued to spread, and one week before admission she noticed that she had an elevation of temperature. At times during the week she had felt chilly, but there had been no real chill.

Her past history was irrelevant.

On entrance she had a temperature of 102.2 F. The pulse was 95 and the respirations were 28. She appeared extremely ill. Physical examination revealed a large ulceration beneath the chin, a deep ulcer of the tip of the tongue and a brawny, red, tender induration of the center of the left cheek. Both hands showed evidence of atrophic arthritis. Her white blood cell count was 1,600 per cubic millimeter and the differential count showed 63 per cent lymphocytes, 35 per cent monocytes and 2 per cent basophils. The red blood cell count was 3.83 million per cubic millimeter and the hemoglobin 63 per cent. The platelets were slightly increased.

December 2 she was given 10 cc. of pentnucleotide intramuscularly and thereafter she received 40 cc. intramuscularly a day until December 16. The dose was then dropped to 20 cc. a day until December 22, when the drug was discontinued.

The ulcerations of her chin and tongue continued to spread until December 15. The induration of her left cheek became necrotic and the slough extended so that there was an opening 5 cm. in diameter through the entire wall of the cheek into the buccal cavity. Her temperature remained between 101 and 104 F. until December 14, when it became normal.

December 11, eight days after the initiation of pentnucleotide therapy, the white blood cell count had risen to 4,500 per cubic millimeter and the differential count showed 5 per cent myelocytes, 3 per cent stab forms, 73 per cent monocytes and 19 per cent lymphocytes. By December 15 the percentage of mature polymorphonuclear neutrophils had increased to 8, the young polymorphonuclear neutrophils were 18 per cent and the myelocytes were 3 per cent. The total white blood cell count had risen to 5,900 per cubic millimeter. December 20 the white blood cell count had risen to 12,400 per cubic millimeter and the polymorphonuclear neutrophils had risen to 29 per cent. Clinical improvement was marked from this time on. The ulcers gradually healed, the necrosis of the cheek cleared up and the blood picture returned to normal. The patient is now perfectly well, except that the chronic arthritis is still present.

SUMMARY

Two cases of agranulocytosis have been seen to follow the administration of causalin. Both patients received pentnucleotide. One patient died sixty hours after admission. The other recovered after a very stormy course with marked ulcerations and noma of the cheek.

The inherent dangers of causalin, containing as it does both aminopyrine and a quinoline derivative, should be borne in mind. Indeed, there would appear to be no excuse for its administration.

Boston City Hospital.

TREATMENT OF CHANCROID WITH SULFANILAMIDE

BORRIS A. KORNBLITH, M.D.; ADOLPH JACOBY, M.D., AND
MICHAEL WISSENGRAD, M.D., NEW YORK

A series of forty-five cases of chancroid was observed between September 1937 and July 1938. A diagnosis was established by clinical signs, positive smears for Ducrey bacilli stained with methylene green pyronine (Una Pappenheim), a positive skin test with Ducrey antigen and negative blood Wassermann test, dark field examinations and Frei test.

The lesions ranged from dime-sized (18 mm.) ulcerations on the prepuce to complete sloughing of the glans penis. The average duration, prior to treatment, was from four weeks to two years. Preliminary treatment with soap and water for a period of one week was instituted and, if no results were obtained, sulfanilamide was then given.

Treatment with sulfanilamide consisted of the administration of 80 grains (5.2 Gm.) of the drug in divided doses for the first five days and 40 grains (2.6 Gm.) in divided doses for nine additional days.

From the Central Clinic, Bureau of Social Hygiene, Department of Health, City of New York.

5. Marshall, E. K., Jr.; Emerson, Kendall, Jr., and Cutting, W. C.: Para-Aminobenzenesulfonamide Absorption and Excretion: Method of Determination in Urine and Blood, *J. A. M. A.* 108:933 (March 20) 1937.

From the Thorndike Memorial Laboratory, Second and Fourth Medical Services (Harvard), the Department of Medicine and the Collis P. Huntington Memorial Hospital, Harvard University.

It was found that without exception the treated cases healed promptly at the end of two weeks. Cases have been followed up for six months without evidence of recurrence. There were no ill effects due to treatment observed in this group of cases. All treatment was given to ambulatory patients.

125 Worth Street.

THE DURATION OF EXCRETION OF GONADOTROPIC
SUBSTANCE AFTER DELIVERY OF NEAR
TERM ABDOMINAL PREGNANCY WITH
RETAINED PLACENTA

H. H. WARE JR., M.D.; R. J. MAIN, PH.D., AND ISABEL
TALIAFERRO, M.A., RICHMOND, VA.

It is generally assumed that, so long as viable placental tissue remains in contact with the maternal circulation, the excretion of gonadotropic substance in the urine continues, irrespective of death or delivery of the fetus. Ware and Main¹ reported that, following delivery of a near term abdominal pregnancy with retained placenta, gonadotropic substance continued to be excreted in amounts sufficient to produce ovulation tests on rabbits for thirty-six days. Goldberger and his associates² found that the ovulation test remained positive on the rabbit as long as thirty days after death of the fetus.

Eisaman and Ziegler³ state that in a case of abdominal pregnancy with retained placenta they were able to obtain positive ovulation tests on rabbits for only eight days after delivery. An infection occurred two weeks after the operation.

In order to determine whether the long duration of excretion of gonadotropic substance reported by Ware and Main and by Goldberger and his associates is to be expected generally in such cases, we repeated these observations on another patient (Ellen B.) recently admitted (1937) to the hospital with a near term abdominal pregnancy. A living child was delivered by laparotomy and the placenta was left in situ. The convalescence of the patient was uneventful and the wound healed without draining. This case will be reported elsewhere.

Ovulation tests were run on rabbits at intervals of three or four days according to the technic previously reported,⁴ except that, instead of virgin rabbits, animals having borne one litter were used in order to insure maturity. Distinctly positive results with the tests were obtained as long as forty-seven days after delivery. Several later tests, although showing definite follicular stimulation, could not be termed positive, although they indicated that the placenta was still viable. The somewhat longer duration of excretion of gonadotropic substance in this case (forty-seven days) as compared to our first case (thirty-six days) may have been due to the supposedly greater sensitivity of multiparous rabbits to gonadotropic substance as compared to that of virgins.

These results, which confirm those previously reported by us, would indicate that the short duration of excretion of gonadotropic substance as reported by Eisaman and Ziegler may well have been due to the infection and subsequent early death of the placental tissue in their case.

As in our previous case, there was complete absence of engorgement of the mother's breasts and no other evidence of lactation. This conforms to the present idea that the stimulus for lactation is the rapid drop in blood estrogen consequent to complete removal of the placenta.

SUMMARY

In the case of near term abdominal pregnancy with retained placenta, the urinary excretion of gonadotropic substance may be expected to continue for from thirty-six to forty-seven days following delivery, in amounts sufficient to produce with unconcentrated urine positive ovulation tests on rabbits.

From the Departments of Obstetrics and Physiology, Medical College of Virginia.

The costs of this investigation were borne by a grant from the Valentine Research Fund.

1. Ware, H. H., and Main, R. J.: *Am. J. Obst. & Gynec.* **27**:536 (May) 1934.

2. Goldberger, M. A.; Salmon, U. J., and Frank, R. T.: *Value of Friedman Test in Diagnosis of Intra-Uterine and Extra-Uterine Pregnancy*. J. A. M. A. **103**:1210 (Oct. 20) 1934.

3. Eisaman, J. R., and Ziegler, C. E.: *Abdominal Pregnancy*. J. A. M. A. **104**:2175 (June 15) 1935.

4. Ware, H. H., and Main, R. J.: *J. Lab. & Clin. Med.* **18**:254 (Dec.) 1932.

Special Articles

DIPHTHERIA MORTALITY IN LARGE
CITIES OF THE UNITED
STATES IN 1937

FIFTEENTH ANNUAL REPORT

The means employed for obtaining the data for this review have been outlined in the report on typhoid deaths.¹ As has been the practice in all previous annual reviews of diphtheria and typhoid, statistics have been obtained from local health officers. As the time of the 1940 census approaches, local estimates of population become less trustworthy. They provide, however, the best available data. The rates must be readjusted in light of the facts obtained at the time of the next federal census.

As has been the case in previous articles, the local health departments report not only the total number of diphtheria deaths that actually occur in the community but also the number of such deaths occurring among nonresidents.

The fourteen New England cities (table 1) report a continued downward trend in the death rate for the group as a whole and approach very closely the record

TABLE 1.—Death Rates of Fourteen Cities in New England
States from Diphtheria (Including Croup) per Hundred
Thousand of Population

	1937	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925	1924	1923	1922	1921	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885	1884	1883	1882	1881	1880	1879	1878	1877	1876	1875	1874	1873	1872	1871	1870	1869	1868	1867	1866	1865	1864	1863	1862	1861	1860	1859	1858	1857	1856	1855	1854	1853	1852	1851	1850	1849	1848	1847	1846	1845	1844	1843	1842	1841	1840	1839	1838	1837	1836	1835	1834	1833	1832	1831	1830	1829	1828	1827	1826	1825	1824	1823	1822	1821	1820	1819	1818	1817	1816	1815	1814	1813	1812	1811	1810	1809	1808	1807	1806	1805	1804	1803	1802	1801	1800	1799	1798	1797	1796	1795	1794	1793	1792	1791	1790	1789	1788	1787	1786	1785	1784	1783	1782	1781	1780	1779	1778	1777	1776	1775	1774	1773	1772	1771	1770	1769	1768	1767	1766	1765	1764	1763	1762	1761	1760	1759	1758	1757	1756	1755	1754	1753	1752	1751	1750	1749	1748	1747	1746	1745	1744	1743	1742	1741	1740	1739	1738	1737	1736	1735	1734	1733	1732	1731	1730	1729	1728	1727	1726	1725	1724	1723	1722	1721	1720	1719	1718	1717	1716	1715	1714	1713	1712	1711	1710	1709	1708	1707	1706	1705	1704	1703	1702	1701	1700	1699	1698	1697	1696	1695	1694	1693	1692	1691	1690	1689	1688	1687	1686	1685	1684	1683	1682	1681	1680	1679	1678	1677	1676	1675	1674	1673	1672	1671	1670	1669	1668	1667	1666	1665	1664	1663	1662	1661	1660	1659	1658	1657	1656	1655	1654	1653	1652	1651	1650	1649	1648	1647	1646	1645	1644	1643	1642	1641	1640	1639	1638	1637	1636	1635	1634	1633	1632	1631	1630	1629	1628	1627	1626	1625	1624	1623	1622	1621	1620	1619	1618	1617	1616	1615	1614	1613	1612	1611	1610	1609	1608	1607	1606	1605	1604	1603	1602	1601	1600	1599	1598	1597	1596	1595	1594	1593	1592	1591	1590	1589	1588	1587	1586	1585	1584	1583	1582	1581	1580	1579	1578	1577	1576	1575	1574	1573	1572	1571	1570	1569	1568	1567	1566	1565	1564	1563	1562	1561	1560	1559	1558	1557	1556	1555	1554	1553	1552	1551	1550	1549	1548	1547	1546	1545	1544	1543	1542	1541	1540	1539	1538	1537	1536	1535	1534	1533	1532	1531	1530	1529	1528	1527	1526	1525	1524	1523	1522	1521	1520	1519	1518	1517	1516	1515	1514	1513	1512	1511	1510	1509	1508	1507	1506	1505	1504	1503	1502	1501	1500	1499	1498	1497	1496	1495	1494	1493	1492	1491	1490	1489	1488	1487	1486	1485	1484	1483	1482	1481	1480	1479	1478	1477	1476	1475	1474	1473	1472	1471	1470	1469	1468	1467	1466	1465	1464	1463	1462	1461	1460	1459	1458	1457	1456	1455	1454	1453	1452	1451	1450	1449	1448	1447	1446	1445	1444	1443	1442	1441	1440	1439	1438	1437	1436	1435	1434	1433	1432	1431	1430	1429	1428	1427	1426	1425	1424	1423	1422	1421	1420	1419	1418	1417	1416	1415	1414	1413	1412	1411	1410	1409	1408	1407	1406	1405	1404	1403	1402	1401	1400	1399	1398	1397	1396	1395	1394	1393	1392	1391	1390	1389	1388	1387	1386	1385	1384	1383	1382	1381	1380	1379	1378	1377	1376	1375	1374	1373	1372	1371	1370	1369	1368	1367	1366	1365	1364	1363	1362	1361	1360	1359	1358	1357	1356	1355	1354	1353	1352	1351	1350	1349	1348	1347	1346	1345	1344	1343	1342	1341	1340	1339	1338	1337	1336	1335	1334	1333	1332	1331	1330	1329	1328	1327	1326	1325	1324	1323	1322	1321	1320	1319	1318	1317	1316	1315	1314	1313	1312	1311	1310	1309	1308	1307	1306	1305	1304	1303	1302	1301	1300	1299	1298	1297	1296	1295	1294	1293	1292	1291	1290	1289	1288	1287	1286	1285	1284	1283	1282	1281	1280	1279	1278	1277	1276	1275	1274	1273	1272	1271	1270	1269	1268	1267	1266	1265	1264	1263	1262	1261	1260	1259	1258	1257	1256	1255	1254	1253	1252	1251	1250	1249	1248	1247	1246	1245	1244	1243	1242	1241	1240	1239	1238	1237	1236	1235	1234	1233	1232	1231	1230	1229	1228	1227	1226	1225	1224	1223	1222	1221	1220	1219	1218	1217	1216	1215	1214	1213	1212	1211	1210	1209	1208	1207	1206	1205	1204	1203	1202	1201	1200	1199	1198	1197	1196	1195	1194	1193	1192	1191	1190	1189	1188	1187	1186	1185	1184	1183	1182	1181	1180	1179	1178	1177	1176	1175	1174	1173	1172	1171	1170	1169	1168	1167	1166	1165	1164	1163	1162	1161	1160	1159	1158	1157	1156	1155	1154	1153	1152	1151	1150	1149	1148	1147	1146	1145	1144	1143	1142	1141	1140	1139	1138	1137	1136	1135	1134	1133	1132	1131	1130	1129	1128	1127	1126	1125	1124	1123	1122	1121	1120	1119	1118	1117	1116	1115	1114	1113	1112	1111	1110	1109	1108	1107	1106	1105	1104	1103	1102	1101	1100	1099	1098	1097	1096	1095	1094	1093	1092	1091	1090	1089	1088	1087	1086	1085	1084	1083	1082	1081	1080	1079	1078	1077	1076	1075	1074	1073	1072	1071	1070	1069	1068	1067	1066	1065	1064	1063	1062	1061	1060	1059	1058	1057	1056	1055	1054	1053	1052	1051	1050	1049	1048	1047	1046	1045	1044	1043	1042	1041	1040	1039	1038	1037	1036	1035	1034	1033	1032	1031	1030	1029	1028	1027	1026	1025	1024	1023	1022	1021	1020	1019	1018	1017	1016	1015	1014	1013	1012	1011	1010	1009	1008	1007	1006	1005	1004	1003	1002	1001	1000	999	998	997	996	995	994	993	992	991	990	989	988	987	986	985	984	983	982	981	980	979	978	977	976	975	974	973	972	971	970	969	968	967	966	965	964	963	962	961	960	959	958	957	956	955	954	953	952	951	950	949	948	947	946	945	944	943	942	941	940	939	938	937	936	935	934	933	932	931	930	929	928	927	926	925	924	923	922	921	920	919	918	917	916	915	914	913	912	911	910	909	908	907	906	905	904	903	902	901	900	899	898	897	896	895	894	893	892	891	890	889	888	887	886	885	884	883	882	881	880	879	878	877	876	875	874	873	872	871	870	869	868	867	866	865	864	863	862	861	860	859	858	857	856	855	854	853	852	851	850	849	848	847	846	845	844	843	842	841	840	839	838	837	836	835	834	833	832	831	830	829	828	827	826	825	824	823	822	821	820	819	818	817	816	815	814	813	812	811	810	809	808	807	806	805	804	803	802	801	800	799	798	797	796	795	794	793	792	791	790	789	788	787	786	785	784	783	782	781	780	779	778	777	776	775	774	773	772	771	770	769	768	767	766	765	764	763	762	761	760	759	758	757	756	755	754	753	752	751	750	749	748	747	746	745	744	743	742	741	740	739	738	737	736	735	734	733	732	731	730	729	728	727	726	725	724	723	722	721	720	719	718	717	716	715	714	713	712	711	710	709	708	707	706	705	704	703	702	701	700	699	698	697	696	695	694	693	692	691	690	689	688	687	686	685	684	683	682	681	680	679	678	677	676	675	674	673	672	671	670	669	668	667	666	665	664	663	662	661	660	659	658	657	656	655	654	653	652	651	650	649	648	647	646	645	644	643	642	641	640	639	638	637	636	635	634	633	632	631	630	629	628	627	626	625	624	623	622	621	620	619	618	617	616	615	614	613	612	611	610	609	608	607	606	605	604	603	602	601	600	599	598	597	596	595	594	593	592	591	590	589	588	587	586	585	584	583	582	581	580	579	578	577	576	575	574	573	572	571	570	569	568	567	566	565	564	563	562	561	560	559	558	557	556	555	554	553	552	551	550	549	548	547	546	545	544	543	542	541	540	539	538	537	536	535	534	533	532	531	530	529	528	527	526	525	524	523	522	521	520	519	518	517	516	515	514	513	512	511	510	509	508</
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-------

the group report no death among residents. The total number of deaths in the area decreased from twenty-eight in 1936 to twenty-one in 1937. The death rate fell from 1.06 to 0.79. Of the twenty cities with no diphtheria death in 1937 (table 11) eight are in the

TABLE 2.—*Death Rates of Eighteen Cities in Middle Atlantic States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1937	1936	1935	1934	1929	1924	1919	1914	1909	1904	1899	1894
Rochester.....	0.0	0.0	0.0	0.7	7.5	16.9	12.7	22.1	32.4	32.3	45.9	96.6
Utica.....	0.0	0.0	0.0	1.2	13.4#	....	....	....	....	....	....	....
Erie.....	0.0	0.0	0.0	3.5	5.8	16.8	15.1	17.7	27.1	42.3	23.1	....
Elizabeth.....	0.0	0.0	1.7	4.5	13.2	19.2	19.3	14.8	51.7	42.4	60.5	79.3
Trenton.....	0.0	0.0	2.4	2.7	4.4	7.3	8.8	12.8	15.8	23.6	92.7#	89.7#
Reading.....	0.0	0.9	0.0	3.8	7.3	21.1	16.9	35.7	29.2	70.1	72.0	94.1
Newark.....	0.2	0.0	0.2	3.0	14.5	9.7	14.6	23.3	30.1	46.7	70.1	110.4
Philadelphia.....	0.3	0.5	1.0	1.3	11.8	16.7	22.7	24.6	34.1	50.0	100.6	119.4
Syracuse.....	0.5*	0.0	0.0	0.4	2.0	22.9	12.9	16.6	17.4	17.7	31.1	55.4
Buffalo.....	0.5	1.7	1.0	4.6	9.1	24.0	27.3	22.0	18.4	24.8	53.5	60.9
Albany.....	0.7*	0.0	0.0	2.9	7.5	12.8	10.4	20.0	31.6	26.9	....	....
Yonkers.....	0.7	0.7*	0.0	0.6	10.4	17.0	17.7	25.3	....	....	....	....
New York.....	0.8	0.5	0.9	2.2	10.7	14.0	21.8	28.0	40.0	65.0	85.8	134.4
Pittsburgh.....	1.1	2.3	1.5	5.0	11.5	20.1	22.3	29.3	20.4	36.9	32.9	86.4
Paterson.....	1.4	0.7	1.4	6.3	9.1	18.5	13.5	16.1	25.5	52.9	111.8	145.4
Scranton.....	2.0	0.7#	0.0	1.3	11.7	12.3	22.1	23.4	....	....	77.8#	48.6#
Jersey City.....	2.1	1.2	4.1	6.0	11.5	18.4	21.0	23.2	32.6	57.9	85.4	108.6
Camden.....	2.5	0.8	5.0	7.7	21.0	20.3	23.2	38.8	48.9	52.6	93.8	104.0

* All diphtheria deaths were stated to be in nonresidents.

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

‡ Diphtheria deaths from Chapin's Municipal Sanitation.

§ Incomplete data.

Diphtheria data for Scranton furnished by Pennsylvania Department of Health, Harrisburg.

* Corrected rate. In review for 1936 Yonkers reported cases instead of deaths.

New England group. Of the nine cities with the highest diphtheria death rate for 1937 (table 9) two are in this group. Boston reports but four deaths, of which three were among residents.

The eighteen cities in the Middle Atlantic states (table 2) continue to hold first place, although the group death rate of 0.71 is slightly higher than the low point (0.65) recorded for 1936. In the latter year there were reported but eighty-seven deaths, compared with ninety-five in 1937. This group of cities which reported the

TABLE 3.—*Death Rates of Nine Cities in South Atlantic States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1937	1936	1935	1934	1929	1924	1919	1914	1909	1904	1899	1894
Wilmington.....	0.9	0.0	3.7	5.3	10.9	11.6	15.2	18.0	27.8	50.9	84.9	83.8
Richmond.....	1.1	2.7	1.1	3.6	6.9	9.8	5.8	7.0	9.8	24.4	17.6	59.7
Baltimore.....	1.3	1.2	0.7	1.7	7.6	11.4	13.5	14.2	16.1	33.0	68.1	70.0
Tampa.....	2.0	1.0*	6.6	4.8	4.6	5.2	9.7#	....	....	....	....	....
Jacksonville.....	2.0	4.7	2.2	5.4	6.0#	....	....	....	....	....	....	....
Washington.....	2.2	4.3	5.8	3.9	7.1	10.5	11.9	6.9	11.2	23.5	50.9	77.9
Norfolk.....	2.3	3.1	2.3	4.6	4.1	4.3	4.1	6.7	17.0	....	....	....
Miami.....	3.1	0.8*	6.5	3.8	5.4#	....	....	....	....	....	....	....
Atlanta.....	4.1	3.8	6.8	5.7	7.0	13.3	10.1	12.5	14.2	11.1	10.5	8.8

* All diphtheria deaths were stated to be in nonresidents.

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

‡ Incomplete data.

lowest quinquennial average for 1930-1934 (2.50) has maintained the lowest group rate for the past three years. In 1936 there was but one city in this group with a rate above 2.0. In the review for that year Yonkers reported eight deaths. Unfortunately, the health department of this city sent in the number of cases instead of the number of deaths. There was but one resident death in 1936. Appropriate correction has been made in the current review and this removes Yonkers from the list of cities which in 1936 reported

a rate in excess of 2.0. In 1937 however there are three cities (Scranton, Jersey City and Camden) which have rates in excess of 2.0. On the other hand there are six cities in the group which report no death from diphtheria and as leaders in such honors are Rochester, Utica and Erie, which have now maintained this enviable position for several years. Rochester and Utica maintain the distinction of being in the group of cities (table 12) that report no death from diphtheria or typhoid. New York reports fifty-eight deaths, all among residents. In a city visited by people from all parts of the land it is impressive that there should be no

TABLE 4.—*Death Rates of Eighteen Cities in East North Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1937	1936	1935	1934	1929	1924	1919	1914	1909	1904	1899	1894
Grand Rapids....	0.6	0.0	0.6	0.3	2.0	19.6	13.5	20.0	26.6	17.2	32.4	99.2
Milwaukee.....	0.6	0.3*	0.7	2.0	8.5	11.4	19.8	27.8	26.4	22.7	51.7	116.2
Cleveland.....	0.6	1.1	2.3	2.5	15.3	14.7	20.0	24.6	20.8	42.6	45.3	95.7
Fort Wayne.....	0.8	2.4	6.7	3.3	5.1	13.1	6.3	....	....	....	....	....
Canton.....	0.9	1.0*	0.7	1.7	2.9	17.5	15.1#	....	....	....	....	....
South Bend.....	0.9	0.9	2.7	1.3	....	....	....	....	....	....	....	....
Cincinnati.....	1.1	1.7	4.1	3.2	5.2	10.6	13.2	13.9	17.0	17.3	37.3	103.7
Dayton.....	1.1	2.7	7.3	3.5	4.6	9.4	9.3	22.1	18.3	17.2	27.4	82.9
Youngstown.....	1.7	1.1	0.6	3.3	10.5	18.5	11.9	40.5	33.5	28.0	17.6	28.4#
Peoria.....	1.7	2.6*	12.7	5.3	4.9	7.4	10.8	10.6	10.6	14.0	14.6	65.0
Flint.....	1.8	1.2	6.0	2.7	4.5	29.9	25.5	12.7	11.0	16.8	6.9	69.2
Columbus.....	1.9	1.2	3.3	3.2	4.6	8.5	7.6	12.1	10.5	11.6	28.5	56.9
Detroit.....	2.0	1.1	0.7	4.8	19.7	24.3	32.2	33.3	27.6	38.5	62.9	132.9
Chicago.....	2.3	2.5	2.4	4.3	11.7	17.5	31.2	37.9	27.0	33.9	69.7	117.3
Toledo.....	2.5	1.0	0.7	2.8	7.2	22.4	14.1	25.4	20.4	56.8	34.6	89.3
Indianapolis....	2.7	3.0	5.6	3.1	6.6	11.7	21.4	13.5	13.3	15.9	36.4	97.3#
Akron.....	2.8	1.6	4.1	2.7	4.0	10.4	18.9	27.8	21.8#	....	....	....
Evansville.....	6.3	2.8	0.0	3.2	3.7	13.9	14.9	16.1	21.2	13.8	18.1	69.7

* All diphtheria deaths were stated to be in nonresidents.

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

‡ Diphtheria deaths from Chapin's Municipal Sanitation.

Incomplete data.

death among nonresidents. The health department states that any death of a nonresident would not be allocated to any other jurisdiction. In contrast to the experience in New York it will be shown later that in other large cities the nonresidents account for an appreciable number of deaths. Of seven deaths in Jersey City but one was of a nonresident. Of eight deaths in Pittsburgh, six were among residents. Philadelphia continues to maintain an excellent position among the largest cities. There were seven deaths, all

TABLE 5.—*Death Rates of Six Cities in East South Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1937	1936	1935	1934	1929	1924	1919	1914	1909	1904	1899	1894
Louisville.....	0.3*	1.4	4.7	6.3	4.6	10.4	0.5	9.0	....	....	39.0	48.6#
Chattanooga....	3.3	3.3	4.0	6.8	5.9	8.7	8.9	....	....	....	....	....
Nashville.....	3.7	3.8	5.8	8.2	11.8	8.0	8.9	7.3	10.3	13.9	30.1	28.4
Memphis.....	3.8	2.2	2.7	6.0	5.8	9.5	11.2	11.9	13.4	6.9	10.0	28.5
Birmingham....	4.2	3.5	2.9	4.2	5.4	5.3	7.2	8.3	6.2	13.4	16.5	26.3
Knoxville.....	6.4	6.5	13.6	9.6	6.3	11.2	....	....	....	....	....	....

* All diphtheria deaths were stated to be in nonresidents.

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

‡ Diphtheria deaths from Chapin's Municipal Sanitation.

Incomplete data.

among residents. Syracuse and Albany would have remained in the honor list with no death had not one nonresident death occurred in each of these cities.

The nine cities in the South Atlantic states (table 3) report fifty-three deaths in 1937 in contrast to sixty-seven in 1936. The rate has fallen from 2.59 to 2.04. There is no city in this area without a death. On

the other hand, of the nine cities in the group, six report that one third or more of the deaths occurred among nonresidents. There is but one city (Atlanta) with a rate in excess of 4.0, while in 1936 there were two such cities (Jacksonville and Washington). Of eleven deaths in Baltimore, seven occurred among residents. Wilmington, without a death in 1936, records one death for 1937. Of fourteen deaths in Washington, three were among nonresidents. Atlanta reports thirteen deaths, of which six were among residents.

TABLE 6.—*Death Rates of Nine Cities in West North Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1937	1936	1935	1934	1929	1924	1919	1914	1909	1904	1899	1894
Duluth.....	0.0	0.0	1.0	0.4	2.0	6.0	10.2	8.8	38.2	20.1	7.6	49.5
Wichita.....	0.0	1.0	2.5	4.6	4.2	...	...	...	...	...	...	...
Omaha.....	0.0	2.7	3.2	4.7	6.4	22.9	35.8	15.8	24.5	20.5	28.2	82.9
Des Moines.....	0.0	3.5†	4.8	4.3	5.2	15.1	16.6	15.1	23.8#	...	...	...
Minneapolis.....	0.2*	1.6	0.6	1.7	11.9	13.4	19.9	28.3	24.4	44.6	34.0	55.0
Kansas City, Mo. 0.5*	0.0	2.2	3.2	4.7	14.4	22.8	15.7#	...	...	...	...	...
St. Paul.....	0.7	0.0	0.7†	1.1	5.2	17.5	20.7	31.4	31.1	27.9	43.3	75.4
Kansas City, Kan. 2.3	0.8	2.4	3.7	4.6	9.8	23.1	12.4#	...	...	...	...	...
St. Louis.....	3.2†	2.0	2.9	4.3	10.3	16.1	24.4	23.7	19.4	43.3	62.9	67.7

* All diphtheria deaths were stated to be in nonresidents.

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

Incomplete data.

The eighteen cities in the East North Central states (table 4) report an increase in the number of deaths from 168 in 1936 to 186 in 1937. The rate has increased from 1.73 to 1.88. There is no city in the group on the honor roll, without a death in 1937. On the other hand there is but one city (Evansville) with a rate in excess of 3.0. Not a single city reports that its deaths occurred exclusively among nonresidents, although five cities report that one third or more of the deaths were of nonresidents. The upward trend in the diphtheria death rate is noticeable in all the East Central states (both North and South). Milwaukee reports three resident among a total of four deaths. In Chicago

TABLE 7.—*Death Rates of Eight Cities in West South Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1937	1936	1935	1934	1929	1924	1919	1914	1909	1904	1899	1894
Tulsa.....	1.4	2.1	3.4	6.8	12.3	8.3#	...	...	...	...	...	...
Houston.....	1.7	4.1	4.7	5.6	8.2	6.4	6.1	7.8	10.5	4.2#	2.4	1.8
Oklahoma City.....	1.8	3.8	2.5	5.7	10.9	...	...	...	...	...	...	...
San Antonio.....	2.7	5.0	9.4	5.6	10.3	7.7	8.7	6.7	7.6	17.1	20.6	4.4
New Orleans.....	3.9	3.9†	5.5†	5.5	8.5	6.5	11.6	19.6	10.2	11.5	17.1	51.3
Dallas.....	4.3	7.3	6.5	9.7	9.8	8.3	7.4	6.9	8.1	16.9	16.0	21.8
Fort Worth.....	4.4	3.9	7.1	7.2	10.8	1.7#	2.0#	2.6	2.8	5.4	...	...
El Paso.....	6.5	3.9	3.8	8.0	7.3	20.0	17.6	29.2	...	...	...	...

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

Incomplete data.

there are reported eighty-four deaths, all among residents. In this city it is the statistical practice to reallocate to the state of Illinois all deaths among individuals whose usual abode is within that state but outside Chicago. It is reported that there were two diphtheria deaths thus reallocated in 1937. Detroit, with thirty-four deaths, is charged with eight nonresident deaths of persons residing in suburban communities but hospitalized in Detroit. The city is legally compelled to hospitalize in its public institution all residents of Wayne County afflicted with a communicable disease when so requested. In Cleveland there were six deaths, all among residents; in Toledo eight deaths, all among

residents. Of the ten deaths reported for Indianapolis, two were of nonresidents; of five reported in Cincinnati, three were among nonresidents. Evansville reports the highest rate for the group. Of seven deaths but three were among residents.

TABLE 8.—*Death Rates of Eleven Cities in Mountain and Pacific States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1937	1936	1935	1934	1929	1924	1919	1914	1909	1904	1899	1894
Spokane.....	0.0	0.0	1.7	0.7	7.5	11.3	4.2	7.6	25.8	...	59.5†	18.1
Long Beach.....	0.0	1.3	1.9†	0.8	2.6	10.4#	...	...	...	...	...	...
Portland.....	0.6†	0.3	0.0	1.3	6.4	11.3	6.0	12.3	12.2	20.2	...	...
Seattle.....	0.8	0.8	0.0	0.4	1.4	6.6	5.5	5.2	12.5	13.4#	27.2†	...
Tacoma.....	0.9*	0.0	0.0	3.9	9.3	12.4	7.7#	...	...	...	...	...
San Francisco.....	1.2	0.6	0.6	1.2	4.6	23.0	17.0	9.2	14.4	44.2	21.6	54.8
Salt Lake City.....	2.0*	0.0	1.4†	0.3	10.1	12.5	14.5	15.1	34.2	46.0	14.8	56.7#
Denver.....	2.0	2.7	4.8	3.9	8.9	23.2	6.7	10.2	20.8	29.6	27.3	130.2
Los Angeles.....	2.3†	3.5†	2.8	4.8	7.0	14.4	7.1	7.5	15.3	25.4	35.8	46.0
Oakland.....	2.6	1.0	5.7†	2.0	7.4	18.8	8.1	10.3	16.1	29.1	...	...
San Diego.....	3.2	2.3	1.9	2.9	6.6	12.2	10.5	8.0	5.8	2.4	...	...

* All diphtheria deaths were stated to be in nonresidents.

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

Diphtheria deaths from Chapin's Municipal Sanitation.

Incomplete data.

The cities in the East South Central states (table 5) report a rate of 3.16, compared with 2.96 in 1936 (forty-two deaths in 1937, thirty-eight in 1936). The one death which occurred in Louisville is reported to be of a nonresident. In four other cities the nonresident

TABLE 9.—*Nine Cities with Highest Diphtheria Rate for 1937*

Atlanta.....	4.1†	Fall River.....	4.3	Evansville.....	6.3†
Birmingham.....	4.2†	Fort Worth.....	4.4	Knoxville.....	6.4†
Dallas.....	4.3	Waterbury.....	4.8	El Paso.....	6.5

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

quota exceeded one third of the total reported deaths. With the exception of Louisville there is no city in the group with a death rate below 3.0. The latter city reports an unusually active immunization and health education program. Of twelve deaths in Birmingham, eight were of residents. One half of the eight deaths in Knoxville were among nonresidents. In Memphis seven of the eleven deaths occurred among nonresidents. The influence of the neighboring rural areas on the typhoid and diphtheria rates of Memphis and other Southern cities has been discussed in the review of typhoid deaths for 1937. In Memphis the lack of sanitation and preventive medical services for Negroes has

TABLE 10.—*Nine Cities with No Diphtheria Deaths in 1936 and 1937*

Cambridge	Erie†	Spokane
Duluth	Rochester†	Trenton
Elizabeth	Somerville	Utica*

* No diphtheria deaths in four years.

† No diphtheria deaths in three years.

a distinct influence on the death rate. In this city there have occurred twenty-five deaths from diphtheria during the past three years, of which number ten were among Memphis residents and fifteen nonresidents brought to the city for treatment. Of the ten resident deaths, seven were among Negroes. Until recently Memphis has lacked the necessary Negro health centers through which to reach susceptible children in this racial group.

The nine cities in the West North Central states (table 6) report a slight decrease in rate (1.37 in 1936, 1.26 in 1937). The diphtheria deaths decreased from thirty-eight in 1936 to thirty-five in 1937. Four cities are on the honor roll with no death, and two additional cities report all deaths among nonresidents. Duluth has now maintained this enviable position for two consecutive years. There are but two cities in the group with a death rate in excess of 2.0. Of twenty-seven deaths reported in St. Louis, eleven occurred among nonresidents. In Kansas City, Mo., there were but two

TABLE 11.—Twenty Cities with No Diphtheria Deaths in 1937

Bridgeport	Long Beach	Spokane
Cambridge	Lowell	Springfield
Des Moines	Lynn	Trenton
Duluth	Omaha	Utica
Elizabeth	Reading	Wichita
Erie	Rochester	Worcester
Hartford	Somerville	

deaths, both among nonresidents. With no death reported in 1936, this city has continued to maintain an excellent record.

The eight cities in the West South Central group (table 7) continue in the unenviable position of having the highest group rate. Impressive, however, is the reduction in the death rate (4.39 in 1936, 3.21 in 1937). The number of deaths has decreased from eighty-seven in 1936 to sixty-seven in 1937. There remains but one city (El Paso) with a rate in excess of 6.0. There are, however, three cities with rates in excess of 4.0. With

TABLE 12.—Ten Cities with No Diphtheria and Typhoid Deaths in 1937

Bridgeport	Reading	Spokane
Duluth	Rochester	Utica
Long Beach	Somerville	Wichita
Lynn		

twenty deaths in New Orleans, six were among nonresidents. Of thirteen deaths in Dallas, eleven were among residents. It is reported that six of the seven deaths in San Antonio were among residents.

The Mountain and Pacific states (table 8) report fifty-nine deaths in 1937, a definite decrease over the seventy-one deaths recorded in 1936. The rate has decreased from 1.78 to 1.43. There are two cities with no death in 1937 (Spokane and Long Beach). Spokane has now remained on this honor roll for two consecutive years. Special mention should be made of the fact

TABLE 13.—Number of Cities with Various Diphtheria Death Rates

	No. of Cities	40 and Over	20 and Over	10 and Over	5 and Over	Under 5	0.0
1890-1894.....	64	52	60	61	62	2	0
1895-1899.....	66	34	53	63	65	1	0
1900-1904.....	68	22	46	64	66	2	0
1905-1909.....	72	3	43	66	71	1	0
1910-1914.....	79	1	36	63	78	1	0
1915-1919.....	84	0	25	62	81	3	0
1920-1924.....	88	0	14	65	86	2	0
1925-1929.....	92	0	1	22	67	25	0
1930-1934.....	93	0	0	0	24	69	0
1935.....	93	0	0	2	17	76	19
1936.....	93	0	0	0	5	69	19
1937.....	93	0	0	0	3	70	20

that both Tacoma and Salt Lake City would have continued on the honor roll, where they were found in 1936, had they not been charged with one and three nonresident deaths, respectively. Long Beach and

Spokane are among the cities with no diphtheria and typhoid deaths in 1937 (table 12). Of eight deaths in Oakland, seven were among residents. Likewise in San Francisco, of eight deaths seven were among residents. It is recorded that, in Los Angeles, thirteen of the thirty-two deaths occurred among nonresidents.

TABLE 14.—Total Diphtheria Death Rates for Eighty-Eight Cities, 1923-1937 *

	Population	Diphtheria Deaths	Diphtheria Death Rate per 100,000 of Population
1923.....	31,060,848	4,078†	13.13
1924.....	31,722,811	3,439	10.84
1925.....	32,384,834	3,133	9.67
1926.....	33,046,827	3,106	9.40
1927.....	33,708,820	3,498	10.36
1928.....	34,370,813	3,176	9.24
1929.....	35,032,806	2,738	7.82
1930.....	35,694,802	1,827	5.12
1931.....	36,356,812	1,366	3.74
1932.....	37,018,812	1,191	3.21
1933.....	37,680,812	861	2.32
1934.....	38,342,812	821	2.23‡
1935.....	38,994,812	764	2.08‡
1936.....	39,656,812	561	1.50
1937.....	40,318,812	556	1.46#

* The five following cities are omitted from this summary because data for the full period are not available: Jacksonville, Miami, Oklahoma City, South Bend and Utica.

† Data from Fort Worth lacking.

‡ The rate for the ninety-three cities in 1935 is 2.09 (population 37,437,812, diphtheria deaths 782). The corresponding rate for 1934 was 2.26 and the average for 1930-1934 was 3.34. The rate for ninety-three cities in 1936 is 1.51, population 38,240,094, diphtheria deaths 577.

Rate for ninety-three cities in 1937 was 1.40 (total population 38,885,435, diphtheria deaths 568).

Special Note.—Deaths for 1936 have been corrected, as Yonkers originally reported eight deaths and later corrected report to one death.

Of the entire ninety-three cities there were nineteen in 1935 with a rate of 5.0 and over (table 13). In 1936 there were but five cities in this class, while in 1937 there were but three. The number of cities with no deaths from diphtheria has increased by one; that is, from nineteen to twenty.

For the entire group of ninety-three cities the diphtheria death rate in 1937 was 1.46, compared with a rate of 1.51 for 1936. The actual number of diphtheria deaths has decreased by but nine (from 577 to 568).

While each health officer was invited to make special comment of any epidemic of diphtheria and record the progress of his diphtheria prevention program, no comments of any great significance were forthcoming. It

TABLE 15.—Total Diphtheria Death Rates per Hundred Thousand of Population for Ninety-Three Cities According to Geographic Divisions

	Population	Diphtheria Deaths		Diphtheria Death Rates			
		1927	1936	1937	1936	1930-1934	1925-1929
New England.....	2,640,933	21	28	0.70	1.06	3.38	8.34
Middle Atlantic.....	13,426,805	95	87	0.71	0.65	2.50	9.97
South Atlantic.....	2,609,531	53	67	2.04	2.59	2.54	7.37*
East North Central.....	9,570,249	186	168	1.88	1.78	2.66	11.21†
East South Central.....	1,330,969	42	38	3.16	2.98	6.36	6.34
West North Central.....	2,778,245	35	38	1.26	1.37	3.22	7.62
West South Central.....	2,084,016	67	87	3.21	4.30	6.55	0.24‡
Mountain and Pacific..	4,144,087	59	71	1.43	1.78	2.69	6.28

* Lacks data for 1925 for Jacksonville and Miami.

† Lacks data for South Bend.

‡ Lacks data for Oklahoma City for 1925 and 1926.

would appear that intensive programs are being carried on in many parts of the country. There seems also to be some increase in death rates which cannot be wholly attributed to the lack of intensive immunization program. On the whole, however, it is only fair to state that there is evidence that the preventive program so extensively instituted throughout the country is resulting in a lower death rate from diphtheria.

THE DETERMINATION AND SOURCES
OF VITAMIN DE. M. NELSON, PH.D.
WASHINGTON, D. C.

This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—Ed.

The observations that rickets can be produced in rats¹ and that healing of induced rickets occurs in the proliferative zone of the cartilage led to the development of quantitative methods for the determination of vitamin D by the so-called line test procedure.² The basis for this procedure is the fact that within certain limits and under properly controlled conditions the degree of healing induced is proportional to the quantity of vitamin D fed. Severe rickets will develop in young rats in about three weeks, and curative periods of from five to ten days are sufficient to produce healing which can be evaluated. The degree of healing can be determined roentgenographically, but the most common procedure is to kill the animal and section and stain one of the leg bones.

Prior to the adoption of the U. S. P. method in 1934 the vitamin D content of pharmaceutical products in this country was indicated in three different units (Steenbock, A. D. M. A. and Poulsson, or Oslo), whose relative value to one another could only be approximated. Each one of these units was defined in terms of a method of assay bearing the same name. Fundamentally the procedures were the same and they were about equally serviceable, but the use of units of different values was responsible for confusion and misunderstanding. The elimination of this confusion was accomplished through the adoption in 1931 by the Health Organization of the League of Nations of an International standard for vitamin D³ and an International unit, which was defined in terms of a definite quantity of the standard. A similar vitamin D standard had been used in Great Britain prior to that time. The International standard for vitamin D is irradiated ergosterol, prepared under specified conditions, dissolved in olive oil. The International unit is defined as "the vitamin D activity of 1 milligram of the International standard solution of irradiated ergosterol, which has been found equal to that of 0.025 microgram of crystalline vitamin D."

The International standards for vitamins are prepared under the auspices of the Health Organization of the League of Nations, and allotments are sent without charge to a central distributing agency in each country. With the extensive commerce in vitamin preparations in this country and consequent heavy demands for standards, it seemed desirable to conserve the supply of International standards. Accordingly

the United States Pharmacopeia adopted (1934 Interim Revision) as a standard for vitamins A and D a specimen of cod liver oil and designated it the U. S. P. (Pharmacopeia) Reference Cod Liver Oil. A suitable quantity of a specially prepared cod liver oil was put up in ounce bottles. The oil was then assayed against the International standards for vitamins A and D. A U. S. P. unit of vitamin D is defined as "equal, in antirachitic potency for the rat, to one International Unit of Vitamin D as defined and adopted by the Conference of Vitamin Standards of the Permanent Commission on Biological Standardization of the League of Nations in June of 1931."

The method of assay referred to is the same as that given in the current Pharmacopeia and, while specific for cod liver oil, with slight modifications is suitable for the assay of a wide variety of vitamin D preparations. The method provides for comparing the vitamin D content of the oil under assay with the U. S. P. Reference Cod Liver Oil by the line test procedure and specifies the conditions for raising the experimental animals, the limits of the period for producing rickets, the duration of the assay period, the number of animals and their age and weight limits, feeding methods, a method for evaluating the degree of healing, the data that must be recorded, and how the vitamin D potency of the oil shall be calculated.

In applying this method to various types of products, due recognition must be given to its limitations. Success in developing experimental rickets is due in part to the feeding of a high proportion of calcium as compared to phosphorus. A disturbance of the prescribed calcium-phosphorus ratio will influence the degree of healing. The rate of healing is also influenced by change in the acid-base balance of the diet, ingestion of products which affect the rate of growth or compounds which influence the assimilation of calcium or phosphorus. For these reasons it is difficult and sometimes impossible to obtain satisfactory assays on food products by direct feeding. With foods fortified with vitamin D these problems can usually be met by extraction of the vitamin with suitable solvents or modification of the basal diet of the control animals.

While the U. S. P. or similar methods involving the line test are most extensively used for vitamin D determinations, the percentage of ash in the fat-free leg bones of the rat may also be used as a criterion in vitamin D assays. This procedure was used by Bethke, Steenbock and Nelson⁴ as early as 1923 but has never received wide acceptance. It is more tedious than the line test but, being objective, could probably be developed to a greater degree of precision. However, efforts in this direction have not produced particularly promising results. Bone ash is also used as a criterion in vitamin D assays, with baby chicks in the tentative A. O. A. C. method.⁵ The fact that rats and chicks do not respond in the same manner to different types of vitamin D⁶ makes it possible by duplicate tests with rats and chicks to differentiate between vitamin D from irradiated ergosterol and from cod liver oil. While 20 U. S. P. units of vitamin D from cod liver oil per hundred grams of feed will permit development of chicks with normal bone ash, from 500 to 2,500 units of vitamin D in the form of

From the the Food and Drug Administration.
1. Sherman, H. C., and Pappenheimer, A. M.: A Dietetic Production of Rickets in Rats and Its Prevention by an Inorganic Salt. *Proc. Soc. Exper. Biol. & Med.* 18: 193-197 (March 9) 1921. McCollum, E. V.: Simmons, Nina; Parsons, H. T.; Shipley, P. G., and Park, E. A.: Studies on Experimental Rickets: I. The Production of Rachitis and Similar Diseases in the Rat by Deficient Diets. *J. Biol. Chem.* 45: 333-341 (Jan.) 1921.

2. McCollum, E. A.: Studies on Experimental Rickets: II. A Delicate Biological Test for Vitamin D. *J. Biol. Chem.* 51: 41-49 (March) 1922.

3. Report of the Conference on Vitamin Standards, Geneva, Publications Department of the League of Nations, No. C.H. 1055 (1), 1931.

4. Bethke, R. M.; Steenbock, Harry, and Nelson, M. T.: Fat Soluble Vitamins: XV. Calcium and Phosphorus Relations to Growth and Composition of the Blood and Bone with Varying Vitamin Intake. *J. Biol. Chem.* 58: 71-103 (Nov.) 1923.
5. Vitamin D Assay by Preventive Biological Test. *J. Off. Agric. Chem.* 20: 72-73 (Feb.) 1937.
6. Bills, C. E.: Physiology of the Sterols, Including Vitamin D. *Physiol. Rev.* 15: 1-97 (Jan.) 1935.

activated ergosterol per hundred grams of feed may be required to provide the same degree of protection. The ratio widens with lengthening of the test period.

Biologic methods for some of the other vitamins are being supplemented by physical and chemical methods, but the latter are of practically no value in the determination of vitamin D. They can of course be applied to preparations of a high degree of purity and therefore have application in certain manufacturing processes. Evidence is accumulating that there are several forms of naturally occurring vitamin D and that their physiologic properties may differ. Vitamin D is a substance having great physiologic activity. A barrel of average grade cod liver oil contains approximately 0.25 Gm. of vitamin D. Pure vitamin D made by irradiation of ergosterol contains forty million units of vitamin D per gram. The chemist needs only one millionth of a gram for a biologic assay. Owing to the small quantities of vitamin D present in products, chemical tests are practically limited to color tests. When one considers that vitamin D belongs to the ubiquitous sterols, the probability of developing color tests with a high degree of specificity seems rather remote.

FOOD SOURCES OF VITAMIN D

There appears to be no proof that vitamin D exists in living plant tissue, and fresh green vegetables are generally considered entirely devoid of this vitamin. Plant tissue which is no longer living will, at least in some instances, acquire significant vitamin D potency when exposed to the sun, as is evidenced by the presence of vitamin D in hays⁷ and cacao shells.⁸ Natural foods which contain vitamin D are of animal origin.⁹ Fish which contain much body oil, such as salmon, sardines and herring, are the richest natural sources; eggs are next in importance, and milk fat and meat products contain some vitamin D. Since this vitamin is not found in appreciable quantities in so many of the foods ordinarily consumed and since evidence of acute vitamin D deficiency occurs only in infants, it appears that the vitamin D requirement of man is very low or that his needs are usually provided for by exposure to sunshine.

Of the common foods fortified with vitamin D, only milk needs to receive serious consideration. The remainder are all too frequently transients and usually emblazoned with statements of their alleged virtues in a manner that cannot escape notice. If the use of foods fortified with vitamin D is contemplated, the labels of the products should be examined to determine whether their vitamin content is stated in units so that the claims can be checked. The types of vitamin D milk that are acceptable to the Council on Foods and the allowable claims for such milk have been published in *THE JOURNAL*.¹⁰ Approximately one half of the evaporated milk manufactured is fortified with vitamin D, and approximately 700 dairies sell milk similarly fortified.

PHARMACEUTICAL PREPARATIONS

The vitamin D of pharmaceutical products is derived either from natural fish liver oils or artificially produced activated sterols. Some of the fish liver oils are offered as the pure oil, such as cod liver oil and halibut liver

oil, and viosterol in oil contains only activated ergosterol in an edible vegetable oil, but a great many of the products offered are combinations of several of the sources of vitamin D. In addition the vitamin D preparations take the form of emulsions, tablets, capsules and malt preparations. The fact that the vitamins of fish liver oils can be removed in the unsaponifiable fraction, concentrated by direct extraction of the oil, or even distilled from the oil under a high vacuum makes it possible to manufacture preparations which have advantages in ease of administration. Products which are either tasteless or very palatable are readily available.

With an ever increasing array of vitamin D preparations before him, what guide does the physician have in the selection of a vitamin D preparation with respect to vitamin D content? There are U. S. P. standards for only three vitamin D preparations. "Cod Liver Oil" is required by the U. S. Pharmacopeia to contain at least 85 U. S. P. units of vitamin D per gram. A teaspoonful contains at least 312 units, calculated on the basis that a teaspoonful is 4 cc. and the oil has a specific gravity of 0.92. A product labeled "Emulsion of Cod Liver Oil" must contain at least 50 per cent cod liver oil by volume, and the vitamin D potency of the oil used must be equal at least to the minimum U. S. P. standard. "Viosterol in Oil" must contain not less than 10,000 units of vitamin D per gram. In addition there are National Formulary standards for three cod liver oil emulsions. "Emulsion of Cod Liver Oil with Hypophosphites" and "Emulsion of Cod Liver Oil with Egg" must contain 50 per cent cod liver oil by volume, and "Emulsion of Cod Liver Oil with Malt" must contain 30 per cent cod liver oil by volume. The federal Food and Drugs Act provides that a drug sold under or by a name recognized in the U. S. Pharmacopeia or National Formulary must conform to the standard of strength required by the Pharmacopeia or National Formulary. The only vitamin D preparations listed in these publications are those named. The federal Food and Drugs Act also requires that a drug must meet the standard of strength under which it is sold. Statements of vitamin potency are therefore subject to check by the Food and Drug Administration. The readers of *THE JOURNAL* are familiar with the vitamin preparations listed in New and Nonofficial Remedies and the requirements for their acceptance. This publication should be consulted for useful information concerning not only classes of products but individual products as well.

During the past few years a large number of new types of vitamin D preparations have appeared on the market. With the discovery of new sources of vitamin D and new methods of preparing vitamin concentrates and the application of new scientific methods in the synthesis of the vitamin, more types of products must be expected before the industry becomes stabilized.

SUMMARY

Within the past few years the method of expressing vitamin D potency has become standardized. Vitamin D content is expressed either in U. S. P. or International units, and these units are equal in value. Biologic methods for the determination of vitamin D are now available which permit satisfactory control over preparations intended for use by the physician. There are at present no physical or chemical methods which give promise of replacing biologic assays.

Most foods appear to be devoid of demonstrable quantities of vitamin D. Fish which contain much body

7. Steenbock, Harry; Hart, E. B.; Elvehjem, C. A., and Kletzien, S. W. F.: Dietary Factors Influencing Calcium Assimilation: VI. The Antirachitic Properties of Hays as Related to Climatic Conditions with Some Observations on the Effect of Irradiation with Ultraviolet Light. *J. Biol. Chem.* 66: 425-440 (Dec.) 1925.
8. Knapp, A. W., and Coward, K. H.: Vitamin D in Cacao Shells. *Analyst* 59: 474-478 (June) 1934.
9. Compilations are given in Miscellaneous Circular 275, United States Department of Agriculture, June 1937.
10. The Present Status of Vitamin D Milk, Report of the Council on Foods, *J. A. M. A.* 108: 206-207 (Jan. 16) 1937.

oil, such as salmon, sardines and herring, are the richest natural sources, eggs are next in importance, and milk fat and meat products contain some vitamin D. Vitamin D milk is now being used extensively as a dependable dietary source of vitamin D.

A great variety of pharmaceutical preparations of vitamin D are available for therapeutic use, and new types can be expected to make their appearance. Since there are minimum standards for vitamin D content for only a few of these preparations, statements of vitamin potency must be relied on for their intelligent use.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

HOWARD A. CARTER, Secretary.

CAMERON HEARTOMETER NOT ACCEPTABLE

Manufacturer: Cameron Heartometer Company, 666 West Division Street, Chicago.

The Cameron Heartometer, according to the firm, is an instrument designed for automatically reading and recording systolic and diastolic arterial blood pressures and the pulse of the brachial artery. This device consists of a blood pressure cuff, a motor driven dial and a small arm on which is fixed a pen that draws a tracing of the pulse according to the change in blood pressure. It operates on a 60 cycle 110 volt alternating current circuit. When only direct current is available a 13½ pound converter is supplied.

The blood pressure determinations are based on the oscillographic method. Visual indication of the pressure readings is provided by the flashing of gas-filled glow lamps. A standard blood pressure cuff is fastened over the upper arm in the usual manner and inflated to a pressure above the expected systolic level. The pressure in the cuff is communicated to a large bellows, causing it to expand. The elongation of this bellows is about seven-eighths inch from 0 to 300 mm. of mercury. The movement of the bellows is indicated by a lever and gear system to which is attached a shaft with a small pulley wheel about three-eighths inch in diameter. A small contact arm is clipped into the groove of this wheel and is held in place by spring tension, so that, when the pulley turns, the contact arm turns with it until it comes up against one of the stationary contacts. During inflation, one end of the bellows moves up, throwing the contact arm against the contact connected with the blue (argon filled) light. When deflation is started the contact arm will move toward the contact connected with the red (neon filled) light and will cause a steady red light to appear. When a point is reached at which the pressure in the cuff is low enough to permit the pulse to penetrate, the oscillations resulting in the bellows will cause the contact arm to oscillate, producing a flashing of the red light synchronous with each heart beat. The appearance of this flashing is taken as systolic pressure. It is comparable to the first pulsation in other oscillographic methods. The pressure level at which this occurs is obtained by a record of a moving pen on the calibrated graph paper. As the bag is further deflated, according to Marey's law, the oscillations will become larger in amplitude, and eventually the contact arm will strike both contacts, thus giving alternate flashes of the red and blue lights. With continued deflation, the bellows will shorten and the amplitude of its pulsation will become smaller so that only the blue light will flash. The highest pressure at which the blue light continues to flash intermittently is taken as the diastolic pressure. This also is recorded and read on the calibrated graph.

In recording the pulse curve the pressure in the cuff is raised to the level which gives the greatest pulse amplitude. This, it is stated, is in the neighborhood of the mean pressure (about 10 mm. of mercury above diastolic). A magnetic clutch is engaged, connecting the bellows to a magnifying lever system. The graph paper is started in motion by a synchronous motor and a pulse tracing is obtained. The graph paper is so con-

structed that one complete revolution takes a minute. The recording of both pressure and pulse is done in ink with glass pens. The heart rate is determined from the scale on the graph and a special rule provided; the pulse contour and arrhythmias are interpreted from this curve.

Clinical tests were performed with the instrument to determine its mechanical accuracy and to confirm the claims made for it by the manufacturer. It was criticized on the following scores: 1. The writing levers do not always show pressure and pulse changes accurately. Delicate adjustments are mandatory after each determination. 2. The flashing of the two lights is not always correct and does not always follow the order given in the pamphlet of instructions—occasionally it becomes necessary to repeat the blood pressure determinations because of this. The flashing of the blue light when the red should flash is especially irritating. 3. Any slight movement of the hand while the pulse is being recorded ruins the pulse curve contour. It may be difficult at times to differentiate it from extrasystoles, for example.

Pulse records were taken on four patients with auricular fibrillation and on three with extrasystoles. While the curves aid in detecting arrhythmias, this method of determination is not advocated. In fact, a much cheaper method could be obtained by determining the oscillations of an undamped mercury manometer. The obliquity of the curves was determined in these patients and no correlations could be made with the condition of the heart or circulatory system, except for the large pulse in the case of aortic insufficiency. Many of the pulse tracings took a curved path on the disk, making the determination of the slope a matter of conjecture.

The principle of determining the systolic blood pressure is as sound as with any other oscillographic apparatus. The selection of the diastolic pressure level appears to be purely arbitrary, the manufacturer not being able to give any principle for the selection of the point used. The use of flashing lights can very readily be misapplied in the matter of showmanship, should one so desire. A less dramatic method would be more in the spirit of scientific equipment. The construction of the blood pressure recording being set arbitrarily, it will therefore depend on the stability of the construction and the facilities in the manufacturing plant to set it accurately. There are no assurances given that with use it will remain accurate. The delicacy of the moving contact arm suggests that the instrument might become inaccurate as the result of jarring incident to transportation.

The pulse recording system is adequately constructed from a mechanical point of view. However, the record made has all the disadvantages found previously in polygraph records. For instance, a method to check the accuracy of the motion of the graph paper is not provided. In determining arrhythmias the instrument is no better than the polygraph now generally discarded, and it lacks the advantage of the polygraph in that no simultaneous venous pulse is recorded. Experience has shown that the latter is essential before any fair approach to the diagnosis of arrhythmias can be made.

The present literature for this device comprises a series of charts which are given considerable diagnostic significance. The firm has not submitted any bibliography in support of the correlation between the charts and the diagnosis which they are said to represent.

The Council on Physical Therapy came to the following conclusions with regard to the Cameron Heartometer: (a) Insufficient evidence is available to substantiate the accuracy of the blood pressure recording device; (b) the pulse recording mechanism does not register venous pressure simultaneously with arterial pressure, which is essential in diagnosing arrhythmias, and (c) the diagnostic claims in the advertising matter and instruction booklet have not been substantiated by critical evidence.

In view of the foregoing report, the Council on Physical Therapy voted not to include the Cameron Heartometer in its list of accepted devices.

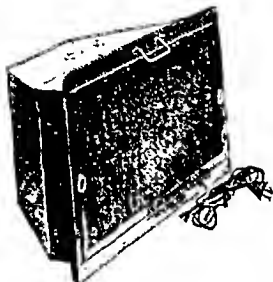
This report has been submitted to the manufacturer and ample time has been allowed for the firm to present critical evidence to substantiate the claims regarded objectionable, misleading or unwarranted. This evidence has not been received. If critical evidence is presented in the future to substantiate the claims, the Council will reconsider the appliance without prejudice.

POLLENEX AIR FILTER ACCEPTABLE

Manufacturer: Geo. W. Pollock Co., 305 North Twenty-Fifth Street, Milwaukee.

The Pollenex Air Filter is designed to remove pollen from the air for the relief of sufferers from hay fever or pollen asthma. It is finished in green cracked lacquer and may be installed in a lift sash window which is 22 inches wide or wider. The metal housing consists of a rectangular front backed by a tapering trapezohedron. The motor and centrifugal type Sirocco fan are mounted in the narrow end of the unit on rubber parts to prevent vibration. The fan is almost noiseless in operation.

Air is drawn into the unit from outside through a circular opening protected by a screen and then forced through a large filter in the front part of the housing. The filter material is a thin lightly textured cellulose. The large size permits influx



Pollenex Air Filter

of a greater volume of air than is possible with a smaller filter. Filters are readily replaced as desired, probably once or twice a season. Under carefully controlled tests, the air volume of 11,000 cubic feet per minute was substantiated.

Tests were made by an investigator acceptable to the Council in order to check the efficiency of the Pollenex Filter in removing pollen from the air. These tests were performed during the hay fever season of

1937. Slides coated with petrolatum were exposed in various locations of the outlet of this filter during its operation and examined at the end of a twenty-four hour period for pollen granules. But few pollen granules were found although the outdoor pollen count was rather high.

During the middle of September, after the filter had been operated for several weeks, a few pollen granules appeared, as did also many dust particles. This indicated that the filter material may have become ruptured by the large dust particles.

In view of the foregoing report, the Council voted to accept the Pollenex Air Filter for inclusion in its list of accepted devices for physical therapy.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

COLLODAURUM NOT ACCEPTABLE FOR N. N. R.

Colloaurum, first promulgated under the name "Colloidal Gold," is promoted by the manufacturer as a cancer cure. It was a product of the Kahlenberg-Klaus Company and was distributed by the Ideal Skin Suture Material Company. Later the Kahlenberg Laboratories, Inc., succeeded both concerns and produces it as Colloaurum. It may be noted that one of the directors of Kahlenberg Laboratories is Louis Kahlenberg, former head of the department of, and at present professor of, chemistry at the University of Wisconsin.

As long ago as 1915 the Council requested Weil to prepare an article on the status of chemotherapy of tumors. Weil¹ pointed out that colloidal metal preparations had been advocated on the basis of a series of experiments on the tumors of animals which dated back to 1911. Weil stated in part (after discussing various methods which had been employed):

"We have seen that it has been quite impossible to duplicate in human beings the therapeutic technic employed in animal experiments. We have seen further that the use of a modified technic in animal experimentation has never been productive of favorable results even at the hands of enthusiastic adherents."

1. Weil, Richard: Chemotherapy and Tumors, J. A. M. A. 64: 1283 (April 17) 1915.

Continuing he stated:

"In order to arrive at a safe and reliable estimate as to the value of any new or experimental procedure in cases of cancer, it seems advisable to accept certain definite therapeutic criteria by which the cases are to be judged. In the absence of such a method, alterations in symptoms which are actually of no real value or importance receive undue emphasis. The natural correction of the disease is associated with such fluctuations that a sanguine therapist can gain some encouragement from even the most hopeless cases. Hence it follows that every mode of treatment has found adherents. The market is flooded with cancer drugs, and cancer charlatans flourish in the most highly educated communities. Unfortunately even well trained, honest and reputable physicians have fallen victims to this fallacy and have lent their names to the support of modes of treatment which in reality produce no determinable effect on the natural evolution of the disease."

These statements which Weil made twenty-three years ago are interesting in view of the advertising claims made by Kahlenberg Laboratories.

In 1925, ten years after Weil's article was published, the Council found this product, Colloaurum, not acceptable,² because the therapeutic claims made for it were not supported by acceptable evidence and were therefore unwarranted.

The only evidence for its use which was available to the Council was a paper by Dr. Edward Ochsner.³ Several years after the publication of the Council report, an unfavorable report by Soiland, Costolow and Meland on the use of metallic colloids in the treatment of cancer appeared in the literature.⁴ Apparently the firm was not aware of this report for it continues active promotion of the product to the medical profession, as demonstrated by the number of inquiries that continue to come to the attention of the Council.

In 1932 editorially⁵ THE JOURNAL stated that no acceptable evidence was available for the use of colloidal gold in the treatment of cancer and that after eight years of promotion any product useful in cancer would be so widely known that any kind of promotion would be entirely unnecessary.

In May 1934 an inquiry concerning Colloaurum was sent to an authority on the treatment of malignant conditions. He replied "We ourselves have purchased this product on the open market on different occasions and have failed to get any effect on cancer whatsoever." Attached to his reply was a form letter and a pamphlet of testimonials which had been addressed to him by the manufacturers recommending Colloaurum. The testimonials, supposedly from physicians throughout the United States and elsewhere, were classified under the following headings:

Reduces Tumors
Relieves Pain
General Condition Improves

Controls Hemorrhage and Odor
Lessens Suffering and Prolongs Life
Pleasant with Treatment

These headings were not supported by an extensive bibliography but merely by the testimonials noted.

Another form letter, mailed by the firm in September 1934, was accompanied by a case report.⁶ There is apparently little significance to the report, since colloidal gold was used after, and only after, the surgical removal of the tumor and was credited with convalescence and recovery from postoperative complications.

An advertising folder contained the following statement:

"Colloaurum is administered orally in most cases especially when the alimentary tract is involved. Intravenous injections are preferred by some physicians."

There is no scientific proof that gold is absorbed when given by mouth, but the serious question of accumulation arises when injections of gold are continued. Agranulocytosis, hepatic impairment, enteritis, pulmonary abscess and death resulting from injections of gold have been reported.⁷ Gold is retained

2. "Colloidal Gold" Not Acceptable for N. N. R., J. A. M. A. 84: 387 (Jan. 31) 1925.

3. Ochsner, E. H.: Some Newer Developments in the Nonoperative Treatment of Cancer (A Preliminary Report), Clin. Med. 31: 10 (Oct.) 1924.

4. Soiland, Albert; Costolow, W. E., and Meland, O. N.: The Metallic Colloids in the Treatment of Cancer, Radiology 8: 469 (June) 1927.

5. Colloidal Gold and Cancer, Current Comment, J. A. M. A. 99: 2188 (Dec. 24) 1932.

6. Nowack, Louis H.: Papillary Adenocarcinoma of the Ovary: Report of Case Effectively Treated with Colloidal Gold, Wisconsin M. J. 25: 139 (March) 1926.

7. Fatzner, H.: Fatal Poisoning by Gold Preparations, Schweiz. med. Wchnschr. 66: 120 (Feb. 1) 1936.

in the human body, and deposition of the metal in the gum mucosa of the mouth, in the eyes, and in the skin may follow its continued use.⁸

Hartfall and Garland⁹ concluded from a study of 100 cases that chrysotherapy was a most important form of treatment of rheumatoid arthritis but noted that because of the marked variation in susceptibility no rules as to dosage could be laid down. They described toxic reactions as usually mild and not contraindications for further treatment. Reactions occurred, however, in half of their cases. In concluding they note that hemorrhagic reactions and exfoliative dermatitis may be fatal and advise that no more gold should be given to patients who develop these reactions. Chrysotherapy in their opinion should be undertaken only by those who are fully alive to its dangers; they believe that the patient should be warned of the possible toxic effects. They include a commendable bibliography of the use of gold in these conditions.

Peters and Short¹⁰ made statistical study of the gold treatment of tuberculosis; their concluding paragraph is of special interest:

"The examination of our statistical results has been a painful shock, for we were convinced whilst carrying out this costly method of treatment that in chrysotherapy we had found a valuable aid; many of the cases seemed to do extremely well. But one tends to forget that many cases previously did extremely well even without gold. It is to us a sad reminder of the extreme fallibility of clinical judgment when exposed to the cruel light of a controlled statistical inquiry on a large number of cases."

Driver and Weller¹¹ reviewed the use of gold salts in the treatment of tuberculosis, tuberculids and lupus erythematosus. They stated that gold has been used in these conditions for about fifteen years and, while it was granted that these salts have proved their value in the therapy of some of these cases, they found, nevertheless, on reviewing the literature, that severe systemic reactions and even deaths have resulted from their use. They note that the larger doses which were earlier recommended were responsible for most of the severe accidents and that the smaller dosage has reduced but not entirely eliminated this danger. They reported a death following the administration of 25 mg. and 50 mg. of gold and sodium thio-sulfate four days apart to a woman with lupus erythematosus. It was believed that death resulted from acute yellow atrophy of the liver due to idiosyncrasy to gold. Prior to death the patient suffered a generalized erythema, fever, prostration, hemorrhages, deafness and icterus. Other reports in the literature have indicated that ulceration of the stomach and upper bowel, following the injection of gold, has occurred and was attributed to the elimination of the metal through these organs.

This might easily be the explanation as to why oral administration [although probably useless] is especially recommended by the firm where there is involvement of the alimentary tract.

Inquiries are being received frequently by the Council office with regard to the product. The firm is apparently extending its advertising and promotion campaign, as evidenced by an advertisement in an issue of *Modern Medicine* with the heading "COLLODAURUM-CANCER PALLIATIVE" and the following copy:

"Twelve years have proved the value of Collo-daurum (Colloidal Gold) for inoperable and post-operative cancer. Helps to relieve pain and prolong life, thus improving prognosis. May be given by mouth. Write for literature and professional prices."

The advertising which is being forwarded to physicians at this time includes a pamphlet which carries the following statement on the frontispiece:

"For twelve years Collo-daurum has been the standby of discriminating physicians and surgeons for the treatment of inoperable and post-operative cases of cancer."

On the last page is found a bibliography for the substance, extending over a period of eleven years and consisting of seven articles. The comparison between the manufacturer's claims and the evidence, which consists with two exceptions of articles

by Edward H. Ochsner,¹² gives some idea of the probable value of the preparation. Two of Dr. Ochsner's articles have appeared since the previous Council report. In the first paper Dr. Ochsner includes many testimonials from physicians, which are very similar to those found in the more recent advertising for the firm. He notes many beneficial effects. The advertising which included these testimonials used these various effects as headings. The article contained three case reports of his own. In one case a mastectomy had been performed nine years before. Axillary nodules recurred and later subsided under Colloidal Gold treatment. Later they recurred and were surgically removed. Following the operation Colloidal Gold was again used and a letter from the patient is said to state that her condition is about the same ("the nodules remained stationary"). The second case was one of lupus vulgaris followed by a malignant ulcer of the face which was excised and did not recur, presumably because Colloidal Gold was administered. The third case was a "papillo-carcinoma of the ovaries." Colloidal gold was used for two years after surgical removal and the patient was in excellent health seven years later. The same may be said of similar cases in which no colloidal gold was given. Finally he indicates that the testimonials which he included "cannot be disposed of with a leer, a smirk or a 'smart-aleck remark.'" In the second article he described the treatment of one case of x-ray carcinoma of the hands. He used Collo-daurum in combination with iodine and also bichloroacetic acid (another Kahlenberg Laboratory product). He stated that he had seen twenty cases of x-ray carcinoma and "fourteen have succumbed to general carcinoma, cachexia or hemorrhage due to the extension of the process into a large vessel. Four are living and apparently well after excision, for periods varying from 4 to 29 years. Two, including the one whose history is here given, are still under treatment." Dr. Ochsner fails to mention how many of these patients received Collo-daurum and it is noted that the one case in which the use Collo-daurum is specifically mentioned is also stated to be incomplete at the time of writing.

In comparison to this evidence the advertising which the firm is using at present contains statements such as the following:

"As long as there is a treatment which can improve the patient's condition, relieve his pain, prolong his life and make him comfortable he should receive its benefit. Collo-daurum (Colloidal Gold Kahlenberg) is capable of accomplishing these things in a majority of cases. A small percentage of so-called hopeless cases are even cured and have remained cured for a period of years. Occasionally improvement is so rapid as to be apparent within a day or two. More often two or three weeks elapse before definite benefits become noticeable. In most cases Collo-daurum can be expected to relieve or reduce the pain, eliminating the need for opiates and shortening the period of terminal cachexia. The administration of Collo-daurum is well worth while for these purposes even when it is too late to hope for a curative effect."

Further on, under the heading "Inoperable Carcinoma," the following information is given:

"Eighty per cent of all cases of inoperable carcinoma are improved by the administration of Collo-daurum. The usual changes are: (1) Improvement of the blood picture. (2) Increase of appetite and general well being. (3) Relief of pain. (4) Retardation of the rate of growth of the tumor. Frequently there is partial absorption, and occasionally complete absorption takes place."

Under the heading "Operable Carcinoma" it is stated that "Surgery offers the best chance for permanent cure of carcinoma." Collo-daurum is recommended, however, as a "prophylactic" (of recurrence) following all cancer operations.

The same routes of administration described earlier in this report is still being recommended, but one additional route is also included:

"When tumor is accessible it is packed with gauze saturated with Collo-daurum. In cancer of the rectum, where a colostomy has been performed, a dram of the remedy may be poured into the lower colostomy opening twice a week."

This pamphlet is accompanied by a form letter recommending the use of Colloidal Gold in place of morphine and contains such interesting information as:

"A short course of iodine drops enhances the effect of Collo-daurum. Five drops of tincture of iodine are given in a wine glass t. i. d. after meals. This is discontinued after two months."

8. Cardis, F., and Conte, M.: Chrysocyanosis, *Ann. de dermat. et syph.* 7: 229 (March) 1936.

9. Hartfall, S. J., and Garland, Hugh G.: Gold Treatment of Rheumatoid Arthritis, *Lancet* 2: 8 (July 6) 1935.

10. Peters, B. A., and Short, C.: Gold Treatment of Tuberculosis, *Lancet* 2: 11 (July 6) 1935.

11. Driver, J. R., and Weller, J. N.: Untoward Results from the Use of Gold Compounds, *Arch. Dermat. & Syph.* 23: 87 (Jan.) 1931.

12. Ochsner, E. H.: Further Observations on the Use of Colloidal Gold in Inoperable Cancer, *Illinois M. J.* 50: 39 (July) 1926; The Use of Colloidal Gold in Inoperable Cancer, *Internat. J. Med. & Surg.* 40: 100 (March) 1927; X-Ray Carcinoma of Both Hands, *Am. J. Surg.* 28: 273 (May) 1935; Colloidal Gold in Inoperable Cancer, *Clin. Med. & Surg.* 42: 321 (July) 1935.

Two successive paragraphs contain the following sentences: "Of course it is not as effective as morphine, but it has none of the drawbacks of the latter." "The pain relieving effect is so great that morphine dosage can be greatly reduced or entirely eliminated." The letter also informs the physician that "the action of Collodaurum is entirely beneficial. It acts as a powerful blood tonic [?], improves appetite and general condition and often retards or stops tumor growth. A small percentage of apparently hopeless cases even progress to clinical cure." The Council is not aware of any adequate evidence which would support these contentions.

The A. M. A. Chemical Laboratory examined two packages of Collodaurum and calculated that the solution contained 0.00029 Gm. of colloidal gold per cubic centimeter (0.0022 grain in 10 minims) and approximately 0.00084 Gm. of lactose per cubic centimeter (0.0065 grain in 10 minims).

After reviewing the product, the available evidence of the value or lack of value of such preparations and the advertising claims made for it, the Council again declared Collodaurum-Kahlenberg unacceptable for inclusion in N. N. R. because in the opinion of the Council (1) it is promoted with unvarnished, exaggerated and misleading therapeutic claims and (2) it is apparently useless in the treatment of cancer and, therefore, inimical to the best interests of the public and the medical profession.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

NUTRADIET ROYAL ANNE CHERRIES PACKED IN WATER

Distributor.—The Nutradiet Company, a subsidiary of S & W Fine Foods, Inc., San Francisco.

Description.—Canned cherries packed in water without added sugar.

Manufacture.—Tree-ripened Royal Anne Cherries, from trees on which no insecticide spray is used after the blossoms appear, are stemmed, sorted, graded for color and size, washed in running water and packed in cans. Water is added and the cans are heated in the presence of steam, sealed and processed in boiling water.

Analysis (submitted by manufacturer).—Moisture 86.2%, total solids 13.8%, ash 0.3%, fat (ether extract) 0.03%, protein (N \times 6.25) 0.6%, crude fiber 0.15%, carbohydrates other than crude fiber (by difference) 12.3%, titratable acidity as malic acid 0.4%.

Calories.—0.5 per gram; 14 per ounce.

Claims of Manufacturer.—For diets in which sweetened fruit is proscribed.

MRS. PALEY'S BABY FOOD—STRAINED BEEF BROTH

Manufacturer.—Paley-Sachs Food Company, Houston, Texas.

Description.—Canned strained beef broth slightly seasoned with salt.

Manufacture.—Fresh selected beef round, U. S. inspected and passed by the Department of Agriculture, is coarsely chopped, a portion of bone is added and the mixture is extracted with cold water. The mixture is allowed to stand from three to four hours in the cold and precooked for from six to eight hours. The meat and bone are removed, the liquid is cooled and excess fat is removed. The resulting broth is diluted with an equal volume of water, clarified, strained, slightly salted, filled into glass jars, vacuum sealed and heat processed.

Analysis (submitted by manufacturer).—Moisture 97.1%, total solids 2.9%, ash 1.1%, fat (ether extract) trace, protein (N \times 6.25) 1.7%, carbohydrate by difference 0.1%, iron (Fe) 0.0034%, calcium (Ca) 0.010%, phosphorus (P) 0.057%.

Calories.—0.07 per gram; 2 per ounce.

- (1) GARTH BRAND TEXAS PINK GRAPEFRUIT (WHOLE SECTIONS)
- (2) GARTH BRAND TEXAS GRAPEFRUIT (WHOLE SECTIONS)
- (3) SUN MAGIC BRAND TEXAS BROKEN PINK GRAPEFRUIT
- (4) SUN MAGIC BRAND TEXAS BROKEN GRAPEFRUIT
- (5) FRUIT OF EDEN BRAND TEXAS PINK GRAPEFRUIT (WHOLE SECTIONS)
- (6) FRUIT OF EDEN BRAND TEXAS GRAPEFRUIT (WHOLE SECTIONS)

Manufacturer.—Tyrrell & Garth, Inc., Houston, Texas.

Description.—Canned, whole or broken sections of pink Texas grapefruit or white Texas grapefruit, sweetened with sugar syrup.

Manufacture.—Pink and white Texas grapefruit are inspected, washed, peeled and the sections separated by hand. The cans are filled with whole or broken sections and sugar syrup of the required density, sealed and heat processed.

Analyses (submitted by manufacturer).—

	(1) (5) per Cent	(2) (6) per Cent	(3) per Cent	(4) per Cent
Moisture	82.3	82.5	79.9	81.6
Total solids	17.7	17.5	20.1	18.4
Ash	0.3	0.3	0.3	0.3
Fat (ether extract)	0.1	0.1	0.1	0.1
Protein (N \times 6.25)	0.7	0.7	0.7	0.7
Reducing sugars as invert	5.9	5.8	6.4	6.1
Sucrose	7.8	7.5	9.4	8.0
Crude fiber	0.1	0.1	0.1	0.1
Carbohydrates other than crude fiber (by difference)	16.5	16.3	18.9	17.2
Vitamin C (titration) Mg. per 100 cc.....	38.0 mg.	30.3 mg.	31.3 mg.	34.6 mg.

Calories.—(1) (2) (5) (6): 0.70 per gram; 20 per ounce.

(3): 0.79 per gram; 22 per ounce.

(4): 0.73 per gram; 21 per ounce.

Vitamins.—These products contain from 605 to 760 international units of vitamin C per hundred cubic centimeters.

- (1) GOLDEN-GRAIN AMBER SYRUP
- (2) GOLDEN-GRAIN WHITE SYRUP

Manufacturer.—Oelerich & Berry Company, Chicago.

Description.—(1) A table syrup; corn syrup and refiners' syrup. (2) A table syrup; corn syrup sweetened with rock candy syrup.

Manufacture.—The corn syrup and refiners' syrup or corn syrup and rock candy syrup are mixed and heated. A small amount of water is added to bring the mixture to the proper density, and it is immediately sealed in tins.

Analyses (submitted by manufacturer).—

	White Syrup, per Cent	Amber Syrup, per Cent
Moisture	24.2	25.0
Total solids	75.8	75.0
Ash	0.2	0.4
Protein (N \times 6.25)	0.1	0.2
Reducing sugars as dextrose	27.7	30.8
Sucrose	4.6	3.1
Dextrins (by difference)	43.2	40.5

Calories.—3 per gram; 85 per ounce.

CELLU BRAND RED RASPBERRY JUICE

Distributor.—The Chicago Dietetic Supply House, Chicago.

Description.—Juice expressed from red raspberries, packed without added sugar or salt.

Manufacture.—Selected ripe red raspberries on which no spray materials are used are washed, sorted, preheated and pressed through cloth. The juice is run into cans, which are sealed and heat processed.

Analysis (submitted by manufacturer).—Moisture 90.6%, total solids 9.4%, ash 0.4%, fat (ether extract) 0.1%, protein (N \times 6.25) 0.3%, crude fiber 0.0, total carbohydrates other than crude fiber (by difference) 8.6%, invert sugar 6.7%, sucrose 0.6%.

Calories.—0.4 per gram; 11 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET : : : CHICAGO, ILL.

Cable Address "Medic, Chicago"

Subscription price Seven dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, AUGUST 6, 1938

THE DEPARTMENT OF JUSTICE INTER- VENES IN MEDICAL CARE

On Sunday afternoon, July 31, delicately timed for Monday morning newspapers, which have in the summer plenty of space, Thurman W. Arnold, assistant attorney general in the Department of Justice of the United States, author of a work on economics and government called "The Folklore of Capitalism," released a statement indicating that the Department of Justice proposes to prosecute the American Medical Association as a monopoly under the federal anti-trust laws if a grand jury investigation to be made in the District of Columbia results in indictments against the American Medical Association, against the affiliated society in Washington, and against certain leaders of organized medicine.

This is the third statement issued to the press by the assistant attorney general as to the intentions of the Department of Justice in this regard. In the statement just issued to the press, the assistant attorney general apparently offers to the American Medical Association and to the others concerned an opportunity to avoid trial by agreeing to consent decrees which will assure the cooperation of the Association in the operation of cooperative clinics. Elsewhere in this issue (page 537) appears a copy of the complete statement issued by Mr. Arnold. It becomes apparent from the quotations in the press that the Department of Justice feels that organized medicine should have nothing to say about methods of payment for medical services; it is even proposed that hospitals shall have nothing to say as to who may or may not practice within their walls.

The statement by the assistant attorney general is in accord with the point of view which he has held for some time in relationship to our government. Apparently it remains to be determined whether or not the federal administration can use the laws and the courts to mold the people of the United States to its beliefs in every phase of life and living, and whether or not fundamental principles of common justice which have

prevailed in this country in the past are to be relegated to the limbo of forgotten things. Until the courts have spoken, physicians need have no fear as to the legality of the service which they render or as to the place which the American Medical Association occupies in our national economy.

FAMILIAL NATURE OF RHEUMATIC DISEASES

Although mention has been repeatedly made of the apparently greater frequency of rheumatic manifestations in some families than in others, the newer methods of study have revealed evidence of this relationship in a most convincing manner. Wilson and Schweitzer¹ selected 112 rheumatic families for study in an attempted appraisal of the role of environment, contagion and heredity in their relation to the observed familial incidence of the disease. These families comprised 468 children over 3 years of age, equally divided as to sex and observed for periods of from three to eighteen years.

Careful records were kept of the patients and their families in a manner similar to that employed by McPhedran and Opie in their studies of tuberculosis in families. After pointing out the possible inaccuracy inherent in the material and in the method of analysis, these authors concluded that there does not appear to be a direct relation between the environmental conditions and the incidence of rheumatic fever. One third of the 112 families lived under relatively favorable environmental conditions and two thirds lived under unfavorable circumstances. In the former the incidence of rheumatic siblings was 53 per cent as compared with 46 per cent in the latter group. Of the 112 rheumatic families, 49 per cent had parental rheumatism and in only 28 per cent of the families were the parents and the pedigree on both sides of the family apparently negative.

Of the four pairs of identical twins studied, all were alike in having rheumatic fever. Of the twelve pairs of fraternal twins, five pairs had similar incidence and seven pairs had dissimilar incidence. A genetic analysis of the data, corrected for size of family, gave agreement between observed and expected values and indicated that the hereditary mechanism involved was a single, autosomal recessive gene. Dominance involving one or more genes and recessives involving two or more genes, as well as sex linkage, were all excluded. Hereditary susceptibility, these workers believe, would seem to determine the familial incidence of rheumatic fever but may not necessarily be the sole condition essential for the development of the disease.

1. Wilson, May, and Schweitzer, M. D.: Rheumatic Fever as a Familial Disease: Environment, Communicability and Heredity in Their Relation to the Observed Familial Incidence of the Disease. *J. Clin. Investigation* 16: 555 (July) 1937.

Recently Read and her co-workers² have analyzed the family histories of thirty-three white children under 15 years of age with rheumatic fever and a similar number of children admitted to the tuberculosis clinic as a control group. The initial procedure in the family study was to obtain full histories from each of the parents and siblings, taking special pains to get a full account of any symptoms indicative of rheumatic infection and cardiovascular disease. Parents were carefully questioned with regard to the names, dates of birth and dates and causes of death of their own brothers, sisters and parents, with emphasis on any evidence of rheumatic manifestations among them. The two groups were adjudged comparable. The parents of the rheumatic patients showed some rheumatic manifestations in 30.8 per cent in contrast to only 7.7 per cent of the parents of the control group. Thus the percentage of rheumatic manifestations in the first is from four to five times greater than that in the control group. Some form of rheumatic disease occurred in 9.1 per cent of the uncles and aunts of the rheumatic children and in 3.8 per cent of the controls'; in 15.5 per cent of the siblings of the rheumatic patients and in 4 per cent of the controls'; in 18.2 per cent of the grandparents of rheumatic patients and in 2.3 per cent of the controls'. All these differences, it is pointed out, are statistically significant. These facts, while not conclusive, clearly indicate the need for a more thorough study of the epidemiology of this disease, especially with regard to the relation between cases in the same family and the inherent predisposition, including a search for somatic characteristics which might be associated with susceptibility to rheumatic infection.

Evidence of a confirmatory nature is available from the newly published study of Kaufmann and Scheerer³ on acute articular rheumatism in twins. They investigated the records of 8,500 twins, among which number acute articular rheumatism was reported in seventy-two sets. The latter group were subjected to careful study. Among twenty-seven sets of uniovular twins concordance of acute articular rheumatism was observed five times and discordance twenty-two times. In the forty-five sets of binovular twins, concordance was observed only once. The much higher incidence of concordance of rheumatism in uniovular twins led the authors to the conclusion that hereditary factors must inevitably play a part in the etiology of this disease.

The evidence of some hereditary factor in the genesis of rheumatic infection now appears to be well substantiated. The exact nature of this factor and its relative role in the production of active manifestations of the disease are, however, still uncertain and should stimulate further active investigation.

2. Read, Frances; Ciocco, Antonio, and Taussig, Helen: The Frequency of Rheumatic Manifestations Among the Siblings, Parents, Uncles, Aunts and Grandparents of Rheumatic and Control Patients, *Am. J. Hyg.* 27: 719 (May) 1938.

3. Kaufmann, Otto, and Scheerer, Erich: Ueber die Erhlichkeit des akuten Gelenkrheumatismus, *Ztschr. f. menschl. Vererbungs- u. Konstitutionslehre* 21: 687 (May 21) 1938.

ABORTION AND LEUNBACH'S PASTE

Abortion is still a major medical problem. Some estimates of the number of abortions each year in this country reach 681,600 and the number of deaths resulting from abortions is said to be 8,179. Physicians of this country are now receiving pamphlets from the Merz and Company Chemical Works, Inc., Newark, N. J., encouraging them to perform therapeutic abortions by injection into the uterus of Leunbach's paste. These pamphlets have stimulated a storm of protest among physicians.

The injection of paste into the uterus for the production of abortion is not a new procedure but it has never been accepted as safe or scientific. The method cannot do much more than to initiate contractions in the uterus, leaving the final cleansing to be done by other means. While Leunbach is said to have found it necessary to curette only twelve patients of 150 in whom he had used his Provokol paste, Otto found that the evacuation was complete in only eight of twenty-four of his cases.

According to Taussig,¹ recent literature has been full of reports concerning the dangers of using paste to produce abortion. Some² of them have already been reported in *THE JOURNAL*. Engelmann cites five deaths from air embolism and twelve deaths from fat embolism after the use of pastes. Brack reported that, at necropsy in two cases of embolism after the injection of pastes, an infiltration of salve occurred throughout the uterine wall. Schach cited one death from fat embolism and records twenty-five similar fatalities in the literature. So strong has the feeling become in Germany that the federal minister of the interior has prohibited the use of Provokol, as Leunbach's paste is called in Germany, except by a physician's prescription and on the physician's responsibility as to the outcome. Leunbach himself said that it is necessary that pastes be free from air and that the cervical canal be free from pathogenic bacteria before pastes are used.

And yet Merz and Company, which claims its product contains neither air nor fat, would implant the idea of safety into the minds of recipients of their pamphlets. These "guarantees" mean, they say, "that with reasonable care neither an air nor a fat embolism will follow the injection of Leunbach's paste." But who will define reasonable care! Will those physicians, and possibly those midwives and others, who make a business of illegal abortions take reasonable care and thus avoid a fatal air or fat embolism? Two physicians in Hamburg, who used another paste, (presumably) for therapeutic abortions, were brought into court. Their two patients had died suddenly. The judge blamed chiefly the blatant advertisements of the manufacturers. He warned, however, that in the future he would deal severely with physicians who used such pastes.

1. Taussig, Frederick J.: Abortion, Spontaneous and Induced, St. Louis, C. V. Mosby Company, 1936.

2. Abortifacient Pastes, J. A. M. A. 98:2155 (June 11) 1932. Interferin, *ibid.* 105:1210 (Oct. 12) 1935.

Current Comment

CONTRAINDICATED BACTERIOPHAGE THERAPY

The danger of producing bacteriophage-resistant variants with heightened virulence and tissue invasiveness would seem to contraindicate local bacteriophage therapy in streptococcal infections. This conclusion by Dr. R. R. Madison¹ of Stanford University School of Medicine is based on his study of the *in vitro* effects of bacteriophage on hemolytic streptococci. As a test of this effect, 100 cc. flasks of veal-infusion broth plus 1 cc. of bacteriophage (phage-lysed homologous streptococcus filtrate) were inoculated with 0.1 cc. of a twenty-four hour broth culture of *Streptococcus haemolyticus*. The rates of population increase and fibrinolysin products were plotted for each flask, control flasks utilizing the same broth minus bacteriophage. During the first six hours the population of each flask increased to nearly 100 million streptococci per cubic centimeter. Lysis then occurred in the bacteriophage-containing flasks, the count falling to about 100 thousand per cubic centimeter as determined by the Petroff-Hauser counting chamber. (On gross appearance the flasks were then transparent, suggesting complete lysis.) This lytic fall in bacterial count was followed by a secondary overgrowth, the count increasing to nearly 10 million per cubic centimeter by the end of twenty-four hours. This bacteriophage-resistant overgrowth formed or secreted fibrinolysin at a faster rate than in the control flasks. By the end of twenty-four hours there was ten times the concentration of the fibrinolysin present in the bacteriophage medium that was present in the bacteriophage-free controls. In previous work Dr. Madison² had shown that there is a close correlation between fibrinolysin production and the virulence or tissue invasiveness of hemolytic streptococci. He concludes from his two studies that, although bacteriophage therapy might temporarily reduce the number of streptococci in a local lesion, such therapy would practically never completely sterilize these tissues and would invariably transform all residual streptococci into bacteriophage-resistant variants with presumably increased pathogenicity. This conclusion is in accord with the experimental evidence reported about two years ago by Bronfenbrenner and Sulkin³ in their study of local bacteriophage therapy in staphylococcal infections. Such local bacteriophage therapy invariably increased the size and severity of the staphylococcal lesion. The extravagant clinical hopes stimulated by the discovery of the Twort "transmissible lysin" ("bacteriophage") seem at present of little more than historical interest. Nevertheless, commercialization of bacteriophage, unaccompanied by warning of possible clinical dangers, still continues in certain parts of the country.

1. Madison, R. R.: *Proc. Soc. Exper. Biol. & Med.* **38**: 129 (Feb.) 1938.

2. Fraser, Frieda H., and Madison, R. R.: *Proc. Soc. Exper. Biol. & Med.* **33**: 307 (Nov.) 1935.

3. Bronfenbrenner, Jacques, and Sulkin, S. E.: *Proc. Soc. Exper. Biol. & Med.* **32**: 1419 (June) 1935.

MEDICAL PORTRAITS ON STAMPS

In recent years many nations have been memorializing their great figures by reproducing portraits on postage stamps.¹ Austria has been foremost in celebrating medical achievement by stamps with portraits of Billroth, Auenbrugger, Skoda, Rokitansky, Meynert, Hyrtl, von Hebra, van Swieten and von Arlt. The Netherlands has honored Boerhaave, Sylvius, Donders and Talma; Egypt has memorialized Imhotep and Amenhotep; Hungary, Semmelweis; Czechoslovakia, Purkinje; Spain, Cajal; Switzerland, Haller; Poland, Kaczkowski; Cuba, Finlay, and the Panama Canal Zone, Gorgas. Some countries have dedicated postage stamps to physicians for achievement other than in medical work. Germany has thus honored Schiller and Goethe; France, Berthelot, Balley and Charcot; Belgium, her Queen Elizabeth, who was a physician; Poland, Copernicus; Brazil, Vargas; Russia, Zamenhof; China, Sun Yat Sen; Greece, Coreas; Lithuania, Basanavicius; San Salvador, Araujo and Palomo, and the Philippine Islands, Rizal. The United States has not as yet honored any of its physicians in this way. There are names in the history of American medicine which are abundantly entitled to such an honor. Perhaps Dr. Benjamin Rush, a signer of the Declaration of Independence, a treasurer of the U. S. Mint, the father of American psychiatry, professor of the practice of medicine in a medical college, physician to the Pennsylvania Hospital, a founder of the Philadelphia Dispensary, a prominent military surgeon in the Revolutionary War and one of the eminent practitioners of medicine of his time will be the first to be memorialized in this way by our Postoffice Department.

DIPHTHERIA MORTALITY IN LARGE CITIES

The fifteenth annual report of diphtheria mortality in large cities of the United States appears on page 524 of this issue of *THE JOURNAL*. The eighteen cities in the Middle Atlantic states continue with the lowest mortality rate of any group, the rate being 0.71 per hundred thousand, which is slightly higher than the low point (0.65) recorded for 1936. The eight cities in the West South Central group remain in the position of having the highest group rate, although the reduction in the death rate from 4.39 in 1936 to 3.21 in 1937 is impressive. In 1935 there were nineteen cities of the ninety-three with a rate of 5.0 per hundred thousand and over, while in 1937 there were only three in this class. The number of cities with no deaths from diphtheria now totals twenty. For the entire group of ninety-three cities the diphtheria death rate in 1937 was 1.46 as compared with 1.51 for 1936. This represents a drop from 13.13 per hundred thousand in 1923, the first year of the annual report. It is evident that the various elements of the diphtheria prevention program have been extraordinarily effective.

1. McNaught, James B.: *Philately's Gallery of Medical Portraits*, the Centaur of Alpha Kappa Kappa **42**: 14 (Nov.) 1936.

ORGANIZATION SECTION

STATEMENT BY THURMAN ARNOLD, ASSISTANT ATTORNEY GENERAL, DEPARTMENT OF JUSTICE, RELATIVE TO INVESTIGATION OF AMERICAN MEDICAL ASSOCIATION

The following is the announcement made by Thurman Arnold, assistant attorney general, in connection with the investigation of the medical profession..

A preliminary investigation made by the Department of Justice in response to numerous complaints has disclosed the following situation with reference to activities within the medical profession in the District of Columbia:

Group Health Association, Inc., was organized in the District of Columbia a year ago by 2,500 Government employees, principally from the lower salary classes, to provide prepaid medical care at a cost which the members could afford to pay. This group retained its own physicians, who have undertaken to provide the members with virtually complete medical care. The Medical Society of the District of Columbia, the American Medical Association, and some of the officials of both these organizations, are attempting to prevent this association from functioning.

Methods Used

The methods they have used are:

1. Threatened expulsion from the District Medical Society of doctors who accept employment with Group Health Association. Because of the power and standing of the Medical Society, and the stigma sometimes attached to expulsion from it, this causes Group Health Association great difficulty in employing competent physicians.

2. Threatened expulsion from the Medical Society of doctors who take part in medical consultations with doctors on the Group Health Association staff. This in effect amounts to forcing members of the Medical Society to participate in an illegal boycott of Group Health Association doctors.

3. The exclusion from Washington hospitals of the Group Health Association staff doctors; this has been accomplished either in combination with the various hospitals or by means of influence, which may or may not have amounted to coercion, upon them. This exclusion has made it impossible for doctors affiliated with Group Health Association to practice their profession in the hospitals and it has prevented members of the association who enter the hospitals as patients from having the services of the physicians of their own choice.

See Law Violation

In the opinion of the Department of Justice, this is a violation of the antitrust laws because it is an attempt on the part of one group of physicians to prevent qualified doctors from carrying on their calling and to prevent members of Group Health Association from selecting physicians of their own choice.

The department interprets the law as prohibiting combinations which prevent others from competing for services as well as goods.

The particular persons responsible for this violation can only be ascertained by a grand jury investigation. Such an investigation will be undertaken by the department in the near future.

The reasons for issuing this statement prior to the calling of a grand jury, follow the general policy heretofore announced. The two objectives of the antitrust laws are, first, to act as a deterrent and to provide a means of maintaining competitive conditions in the future. The second objective is a constructive aim which requires the cooperation of those concerned.

In obtaining this cooperation, the Department must avoid making surprise moves. It must warn those who are engaged in what the Department considers violations of the acts of its attitude toward such activities; and in fairness to them and for their own protection, it must do so as far in advance as possible. Such advance notice may also be useful in calling the attention

of Congress to the Department's interpretation of the law so that possible amendments may be considered. Advance notice of a contemplated grand-jury proceeding is not always possible.

Objective Defined

Tactical reasons, in some cases, as to where it is feared that witnesses may be approached, may compel action without warning. These reasons, however, do not exist in a proceeding against men of the character of those engaged in the profession of medicine.

In obtaining the cooperation necessary to accomplish the Department's antitrust proceedings, it is necessary to put the prosecution in its proper setting. It is therefore important to repeat that an indictment for violation of the antitrust laws does not necessarily charge a crime involving moral turpitude.

Thus, in the present case, the Department does not take the view that the offenses committed are crimes which reflect upon the character or high standing of the persons who may be involved. The analogy to which this proceeding should be compared is that of a prosecution for reckless driving, committed by a person of distinction and good-will who is in a hurry to meet his legitimate engagements.

The absence of moral turpitude, however, does not lessen the duty of the Department to prosecute where it believes violations of the antitrust laws have occurred. This duty has been laid upon it by Congress. Congress has given it no right to use the distinction between malicious violations of the antitrust law and reckless or careless violations as a basis for its choice between civil and criminal procedure.

Congress has not indicated that the respectable character of the defendants or their achievements in other fields, is a consideration for the Department's action. Such matters are properly within its province in recommending the type of sentence, but not in recommending the type of prosecution.

No Alternative

As the Department has already announced, therefore, where evidence of violations of the antitrust laws exists, it has no alternative except to proceed before a grand jury, except in those cases where past acquiescence or other special considerations have made a criminal proceeding inequitable.

These introductory observations are necessary because the policy of issuing statements of this character is still new. They are intended to survey the general problem of antitrust policy of which this suit is a part. Their purpose is to create an atmosphere which leaves the door open to a constructive proposal at any stage of the litigation. In order to accomplish this it is important to understand that many types of antitrust violations are in the nature of misdemeanors, and that the power of the courts to determine the sentence offers ample opportunity to avoid undue and unjustified severity on any individual. With the above restatement of our general antitrust policy in mind, we may proceed to consider the particular problems relating to the practice of medicine which form the background of this proceeding.

ECONOMIC CONDITIONS OF MEDICAL PRACTICE

Although this proceeding concerns especially the District of Columbia, it is selected because its importance is nation-wide and its value as a precedent is of far-reaching consequence on one of our most pressing problems.

The illegal activities of organized medicine in this instance are typical of what has occurred in other cities throughout the country whenever cooperative health groups have been formed. In discussing the economic conditions of medicine which makes

this suit of great importance, it is therefore appropriate to consider briefly some of the broader aspects of the national health problem.

Care for All

In spite of great technical proficiency, the medical profession has not been successful in furnishing adequate medical care to all the American people at a cost that they can afford to pay. Careful studies have demonstrated that the individual practitioner, even though he devotes a portion of his time to charitable work, cannot supply all the medical needs of persons of low or moderate incomes.

Primarily this is not, of course, the fault of the doctor. It is a result of the low incomes of a large part of the community on the one hand, and of the increasing cost of adequate medical treatment on the other. The development of scientific apparatus, increasing specialization, and better standards of care, desirable as they are, have all contributed to this situation.

Recent studies by government technicians have brought out the fact that the forty million persons in the United States in families with annual incomes of less than \$800 cannot pay for medical care, and in many cases do not receive it when they are in need of it.

For instance, at least half the present toll of mothers' deaths in childbearing, and of infants in the first month of life, are preventable with proper prenatal care and medical services in delivery. Half the babies born annually in this country are in families with less than \$1,000 income a year. It is therefore significant that infant mortality is five times higher in families with less than \$500 a year than it is in families with \$3,000 or more a year.

Left Without Care

These facts are cited because experience has demonstrated the definite possibility of reducing infant mortality and of danger to mothers by proper care. The enormous difference in the records of low-income families is prima facie evidence that the medical profession as it is now organized is not providing them with adequate care.

Acute illness of all kinds increases as one goes down the income scale. It is 47 per cent more prevalent in families on relief than in those with \$3,000 or more annual income. Chronic illnesses are 87 per cent more prevalent in relief families; non-relief families of less than \$1,000 income have twice the illness disability of families with more than \$1,000.

In any one year, 10 per cent of the families bear 41 per cent of the costs of illness. Another 32 per cent of the families bear 41 per cent of the costs, while the remaining 58 per cent of the families bear only 18 per cent of the costs.

Spreading Costs

The same family may not stay in the same sickness group year after year. The incidence of serious illness is extremely uneven, among persons of the same income. That is the reason advanced for cooperative methods of payment for medical care; by spreading the cost over the whole membership, these methods provide adequate service to all at the cost of a moderate and uniform charge to each.

This type of organization is already familiar in the United States in dealing with hospital charges, and has proved highly successful. Group hospital plans on a cooperative basis are in force in over sixty cities and cover more than 1,500,000 subscribers.

These facts make it amply clear that the medical profession's present efforts to meet the problem of making its knowledge and skill generally available have not proved successful even from its own point of view.

Cooperative health associations are primarily aimed to help families not on relief. Theirs is the most pressing medical problem today because they have no public funds and will not go to charity. Many studies of the problem, such as the report of the committee on costs of medical care, a research committee organized under a foundation grant, bring out the fact that the moderate income groups have peculiar difficulty in providing adequate medical service for themselves.

Available Clinics

The medically indigent in many localities have access to free clinics or charitable services by doctors, and their unsatis-

fied needs may be more amply filled than at present by an expansion of private charity or governmental grants. But those with income enough to pay for some medical service either cannot avail themselves of these free facilities, or because of self respect, they do not desire to do so.

Such persons experience no difficulty when their medical needs are slight; but when serious illness strikes, or several members of the family require attention within a short time, the financial burden is excessive.

As has been stated above, these observations are made to put this proceeding in its proper setting. The Department of Justice is not in a position to decide whether or not cooperative health associations are a proper solution. Its function is rather to prevent artificial impediments by organized groups who desire to escape competition from the various attempts which may be made from time to time to bring down the cost of medical care.

Open Competition

The Sherman act is not a method of directing or planning the future; instead, it is a means of keeping a competitive situation open so that those who can offer services at less cost are not impeded by agreements, boycotts, blacklists, expulsions from societies, or organized activities of any character. The economic conditions are surveyed not with an idea of planning a solution, but with the idea of keeping the situation free from restraint.

Case Under Probe

The circumstances of the case under investigation: Group Health Association is a consumers cooperative organization whose members pay monthly dues; with the funds collected the association retains a staff of physicians and operates a clinic. The association has encountered opposition from the Medical Society of the District of Columbia and from the American Medical Association since its formation. The medical society's methods have already been outlined in the introductory portion of this statement. Typical examples of what has occurred may be given here.

Even before Group Health Association had begun operation of its clinic, the local medical society and the American Medical Association made public attacks upon the ethics of the association and upon its legality and its financial soundness.

At the same time the medical society began expulsion proceedings against the association's doctors; these proceedings were based upon charges of "unethical" conduct, although the doctor's only offense had been their willingness to serve the association. Expulsion of the association's doctors was sought not only from the Medical Society of the District of Columbia, but also from other medical societies affiliated with the American Medical Association in other parts of the nation.

The proceedings against one of the association's doctors were carried to a conclusion and the doctor was expelled. Proceedings against another doctor are still pending. An effort also was made to secure the expulsion of a Washington specialist who had disregarded the society's edict by engaging in professional relations with a Group Health Association doctor.

Striking Example

A striking example of the restrictions placed upon Group Health Association's doctors in securing consultations with other Washington physicians occurred in the case of a patient suffering from a serious heart ailment. The consulting specialist was instructed by an officer of the Medical Society that he could not consult with the attending association physician. It was, therefore, necessary for the patient to see the specialist alone and for the specialist to communicate his conclusions to the Group Health Association doctor by correspondence. In other instances, Group Health Association checks have been rejected by Washington consultants because of fear of the Medical Society's attitude.

The close relationship existing between the medical society and the principal hospitals in Washington has resulted in denial to Group Health Association's physicians of access to hospital facilities in the District of Columbia. Not even in emergency cases are these doctors allowed to attend their patients. For example, an association member earning \$1,440 a year recently telephoned the association's surgeon at midnight and reported that her husband had been taken to a Washington hospital with

acute appendicitis, and requested that the surgeon come to the hospital immediately to take charge of the case.

Choice Defined

The hospital declined to permit the association surgeon to operate, notwithstanding the fact that the member had desired this surgeon's services and had paid for them through her membership in the association.

The member, therefore, was compelled to incur heavy surgical and hospital expenses that she would not have needed to contract for if the association had been permitted to carry out, without interference, its agreement with her. She also was denied the right to have the doctor of her own choice attend to the case.

TWO—THE CHOICE OF REMEDIES

The evidence revealed by the present investigation appears to warrant submission to a grand jury for such action as that body may determine to be necessary. Such a course is in line with the ordinary practice of the department when it has information indicating that there have been violations of the criminal provisions of the law. As previously announced, the department feels that it cannot take the responsibility of declining to present to a grand jury evidence that the antitrust laws have been violated whenever it has such evidence in its possession.

In the event that voluntary cooperation results in constructive proposals going beyond the elimination of illegal practices, the department will adhere to its previously announced policy of submitting such proposals to the court as a basis for a consent decree. The department's policy with respect to the concurrent use of civil and criminal proceedings has already been explained in detail in the statement relating to the prosecution of the auto finance companies, issued on May 18, 1938.

THREE—ECONOMIC RESULTS TO BE EXPECTED

In instituting this proceeding, the Department of Justice again emphasizes that it is not deciding what are the proper methods of solving the problems of medical economics or indeed whether cooperative health associations have a place among those methods. It simply takes the position that monopoly practices should not be employed to prevent what may be illuminating experiments in this field.

The Group Health Association seems to provide the opportunity for such an experiment, since it is composed of Government employes of general similarity of health, income and working conditions, and occupies a field in the Nation's Capital where close observation may be made of the results, and adequate publicity given to any conclusions.

The department believes that the antitrust laws make it illegal for medical societies or individual practitioners in the District of Columbia to obtain or retain for themselves a monopoly of the community's medical services, so long as adequate standards are maintained in the treatment of patients among those doctors who are willing to serve cooperative or other groups.

No Limitations

No combination or conspiracy can be allowed to limit a doctor's freedom to arrange his practice as he chooses, so long as by therapeutic standards his methods are approved and do not violate the law. Organized medicine should not be allowed to extend its necessary and proper control over standards having to do with the science and art of medicine, to include control over methods of payment for services involving the economic freedom and the welfare of consumers and the legal rights of individual doctors.

There should be free and fair competition between new forms of organization for medical service and older types of practice, without the use of organized coercion or illegal restraint on either side. If the newer forms of organization should result in inferior standards of therapy, as is feared by their medical opponents, that fact can be revealed only by experiment.

It is hoped that this proceeding will lead to the cessation of such practices as have been alluded to above, with the result that there may be free and fair competition between the new forms of organization and the older types of practice.

When further legislation is desirable, and if so, its form may perhaps be indicated as a result of this investigation.

THURMAN ARNOLD,
Assistant Attorney General.

Approved:
HOMER CUMMINGS,
Attorney General.
July 30, 1938.

CHICAGO TRIBUNE DISCUSSES ARNOLD'S PRONUNCIAMENTO

EDITORIAL CHICAGO TRIBUNE, TUESDAY, AUGUST 2

PROSECUTING THE DOCTORS

The department of justice has announced its intention of proceeding against the American Medical association and its affiliated Washington society as a conspiracy in restraint of trade. The evidence is about to be presented to a federal grand jury for appropriate action.

Thurman Arnold, assistant attorney general in charge of monopoly prosecutions, has issued a statement of his reason for the present action. Mr. Arnold says that some 2,500 government pay rollers in Washington have joined what they called Group Health Association, Inc. The members pay a flat fee and in return receive medical services as needed. The medical society disapproved the plan. Physicians in Washington were put on notice that if they accept employment from Group Health association they would be dismissed from the society. Likewise, physicians who were summoned into consultation by the Group Health staff were to be expelled. According to Mr. Arnold that meant, in turn, that their hospital connections would be severed. The experience of the physicians led by Dr. Louis Schmidt who were disciplined by the Chicago Medical society for cooperating with a number of low cost medical clinics in Chicago no doubt served as a precedent for the action of the Washington branch.

A great many persons, including a substantial number of medical men, believe the doctors' societies have been too zealous in preserving the traditional professional relationship. It is not necessary to go into the merits of that controversy. The worst that can be said of the medical societies—and it has been said often—is that they have been following trade union practices.

Members have been subjected to regulations which forbid them, under penalty of expulsion from their union, from freely contracting for their services.

The American Medical association, in short, is facing prosecution as a trade union. This is curious because trade unions are specifically exempt from the operations of the anti-trust laws. It is doubly curious because of all the trade unions ever known the medical association is the one which has been the least selfish, the most public spirited.

There is no union scale for doctors. There are no union hours. The ablest medical men in every community give their services without pay to the poor as a matter of course. Few doctors are rich and many an able physician earns little more than a bare livelihood. Thanks largely to their trade union, the standards of training and competence in the profession have risen steadily with the years. Eight or ten years of strenuous study and apprenticeship are required before the doctor is permitted to earn a thin dime.

This administration in Washington has given every encouragement to C. I. O. unionism, characterized by the grossest kind of coercion. The C. I. O. has been egged on to crack the skulls of workmen who didn't care to join its ranks; to seize and hold property in violation of law and justice; to wreck factories, resist the police, intimidate local officials. The aim was to deny to the man who refused to join the C. I. O. every chance to work. All this and much more like it has had the full blessing of the administration. Indeed, the labor board has repeatedly ordered the reemployment of C. I. O. men guilty of rioting.

But when the doctors in pursuit of an ideal of the proper relation of physician to patient have done no more than expel from their society members who refused to accept its rules of ethics, the medical association is haled into the courts almost as a common criminal.

To earn the regard of this administration the American Medical Association should have ordered its members to accept no less than \$10 for a call, cash in advance, and to refuse treatment except on those terms; should have picketed the offices

of doctors who refused to accept its scale of wages and hours; should have brought in plug-uglies armed with baseball bats to wreck the laboratories of Group Health association and brain any one attempting to enter the place.

The kind of trade unionism represented by the A. M. A., which establishes high professional standards for its members, continually raises those standards, publishes important scientific journals, and demands of every member that he put his patient's interest above his own is criminal in the Washington of 1938.

EDITORIAL COMMENT ON THE NATIONAL HEALTH CONFERENCES

THE BUILDERS OF THE HOUSE

The Evening Star, Washington, D. C., July 20

The United States owes an incalculable debt to the American Medical Association.

Whatever criticisms now may be aimed at it by the idealistically minded who are shocked at obvious imperfections in the medical services available to the people as a whole, the fact remains that the organized profession itself, voluntarily and from a sense of duty, is responsible for about everything "social" in the practice of the healing arts today.

It found American medicine in a chaotic condition. There were essentially no minimum standards, of education or of competence. In most states a few years as helper in a doctor's office or around a hospital and the passing of a written examination were sufficient to launch a man on the practice of medicine. The American Medical Association has worked ceaselessly for higher and higher minimum requirements. It has put low-grade medical schools out of business. It has made the acquiring of an M.D. degree and a state license to practice a major struggle for any man and a hopeless struggle for an individual of mediocre intelligence. The public now is absolutely assured that any man who has graduated from an American medical college and passed a state board examination is highly competent. It is reasonably assured that he is not lazy or careless, unless his personality undergoes a remarkable change after leaving college. And it is reasonably assured that he is not a scoundrel, for dishonesty hardly could get through the filter of present-day medical education, for which the American Medical Association is responsible.

It has waged a strenuous fight to eliminate quackery. Contemptuously defiant of slander and libel suits, it has mercilessly exposed the nonsense of healing cults and alcohol-and-water nostrums. It probably would have succeeded altogether were it not for the obstacles thrown in its way by politics.

Through its local units it has rigorously punished, by censure and by expulsion, violations of medical ethics.

It has waged an unceasing campaign, both nationally and through these same local units, for the health education of the public. A good example is the public address program just announced by one of these local units, the Medical Society of the District of Columbia.

By cold experimentation in its laboratories it has established the values of new remedies. It has constantly encouraged medical research and has kept the entire profession aware of the latest advances in medical science.

Now it is criticized for not having done enough. It may be that a more pretentious structure of public medicine will result from the national conference on public health now in session here or from some of the numerous movements in that direction now afoot. This structure may be substantial or it may be a flimsy thing built of airy ideals. But the work of the American Medical Association during the past half century has made one thing certain—it will be built on the solid rocks of a competent, honest profession rather than on the shifting sands of unregulated quackery.

Whatever grievance any one may feel against the American Medical Association for its present honestly waged battle against socialized medicine, it must be remembered that any sort of socialized medicine would be a fantastic dream had it not been for the organized profession's own idealistic endeavors.

A MONOPOLY IN MEDICINE

Evening Public Ledger, Philadelphia, July 20

At the opening meeting of the National Health Conference, called together in Washington at President Roosevelt's suggestion, opposing opinions on the subject of socialized medical service met in head-on collision. Conservative members of the medical profession insist that care of the public health is primarily the doctor's responsibility. The "left wing" favors federalized medicine, in one form or another, to provide more adequate hospitals, coordinated research and medical service for those who cannot pay a doctor's fees.

This is no longer a quarrel among medical men, but a public issue. And, as President Roosevelt said in his message to the conference, "nothing is more important to a nation than the health of its people."

There is need for concerted effort to cure or control such deadly diseases as tuberculosis, syphilis and cancer. Some parts of the country are seriously short of medical facilities. Millions of the poor suffer unnecessary illness and physical handicaps because they cannot pay for their cure. The economic losses caused by ill health are enormous.

Some time ago the President appointed a committee to consider what might be done, and its report offered a staggering program, calling for expenditure of \$850,000,000 a year for ten years. In effect, the expenditure of this amount of federal, state and local funds would create a vast medical monopoly. There would be little room left for the private practitioner.

Critics of these proposals point out that the mere spending of a great deal of money does not guarantee a good return for it. The enormous power over the lives and liberties of the people involved in a vast scheme of federalized medical service is an obvious danger.

It is a part of the New Deal philosophy that any wrong can be righted by spending a lot of money. But the health of the nation is like the health of an individual. The size of the fee does not cure the patient, but the ability of the physician.

THE HEALTH CONFERENCE

The New York Times, July 19

Last June Miss Josephine Roche politely but firmly served notice on the American Medical Association, assembled at San Francisco, that organized medicine was expected to present a program of medical relief at a national health conference to be held at Washington. That conference is now in session—called at the President's request. For the first time the Association will engage in a public debate with government health agencies, physicians who dissent from the Association's views, labor, business. The issues have been defined. Is it possible for the private practitioner to meet the needs of the medically needy on the present competitive, cash-payment basis, leaving him to decide what his fee shall be? Or must local, state and federal agencies come to take a hand in the situation? No policy is to be formulated. There is to be nothing more than a clashing of minds, an airing of views.

Labor, business, the dissenters among the American Medical Association have no well conceived plans, no program, no organization. Hence the principal debaters are bound to be the Association and the government. The Association is a united, positive, disciplined body which has always insisted that medical men are alone competent to discuss and provide

medical care. As for the government, its Technical Committee on Medical Care will come prepared to argue the case for the New Deal—to argue that physicians have nothing to fear from what is called "Federalization," that no direct interference with the practice of medicine is contemplated, and that it will be the government's policy merely to stimulate and support physicians in the manner so brilliantly exemplified by the Public Health Service. In such a conflict the New Deal seems certain to win. There are dangers in this conflict—political dangers. The question of costs must be discussed. The possibility that the New Deal's health plans may be injected into politics, from which they should be rigorously excluded, is not remote.

There is no one, sure-fire solution for this problem of medical care. It has long been apparent that voluntary insurance, group practice of medicine, the cooperative purchase of medical care, the three-cents-a-day plan under which hundreds of thousands now receive hospital care for thirty days, and other plans which have proved their worth and which have been opposed by organized medicine must be invoked if we are not to be overwhelmed by taxes on behalf of social security. We need outstanding leadership to show us what devices may be used effectively.

MEDICAL PATERNALISM

The Indianapolis Star, July 21

The proposal to spend hundreds of millions annually in a vast public health program must be regarded chiefly as an extension of government paternalism. The political ramifications of the scheme are apparent in a movement which would mark the entering wedge for federal supervision of socialized medicine. The plan to spend \$850,000,000 a year was laid before the National Health Conference by a committee on medical care appointed by President Roosevelt. It is the first government-sponsored project for providing medical, hospital and dental care, as well as health insurance and illness compensation.

The theory of so-called state medicine has a number of advocates among "rebel" members of the medical profession, although the majority of the American Medical Association vigorously opposes that trend. Dr. Irvin Abell of Louisville, Ky., President of the A. M. A., condemned the plan. He said:

Those people who think that they can devise a centrally controlled medical service plan which can be fitted to the varying conditions of the states, counties and cities of this country are discussing theories which no practical health administrator could possibly approve.

The country is confronted with a vital problem in reducing the cost of medical care and hospitalization, a condition recognized by physicians and laymen. Common sense suggests that its solution should be entrusted to those best qualified by knowledge and experience to deal with public health, rather than by governmental agencies too closely allied with present theories of regimentation and spending.

The "rebel" medicos claim that the medical associations have been too hesitant in effecting those reforms necessary to early provision for the underprivileged. It may be true that the natural conservatism of the profession has led to procrastination, but this scarcely can excuse adoption of a program that must inevitably lower medical standards and invite the blight of political control and socialistic practice. The medical profession is entitled to the opportunity to submit a workable service to supplement and expand the existing clinics, dispensaries and charitable service already caring for a considerable portion of the population.

It is impossible to ignore the parallel existing between the proposal of the President's committee on medical care and his committee on education. Both resort to vast federal expenditures which involve surrender of independence and individualism to standardization and political control. The nation in recent years has witnessed a disgraceful effort to escape state and local responsibility by indiscriminate appeals for federal funds. Sound educators have fought governmental control of the schools. The same type of progressive doctors will question the government's invasion of medicine beyond the present scope of the Public Health Service.

GOVERNMENT AND MEDICINE

The Evening Star, Washington, D. C., July 26

The United States government already is deep in the field of medicine.

The nation's hospitals for veterans, its medical services for the Army and Navy, its National Institute of Health, with one of the most efficient medical research laboratories in the world, the far-flung activities of the Public Health Service, of the Children's Bureau, of the Department of Agriculture constitute an impressive set-up, rivaled by no other country. We have gone far to protect the health of the citizens.

But in the past the actual practice of medicine, the relations between the individual physician and the individual patient, has not been considered a government function, with the quite limited exception of the care of persons entitled to be considered as government wards. It may be that all this is to be changed. There can be hardly any question, after the national conference held here this week, that there is an increasingly great public sentiment for the extension of federal services in various directions. The needs, it is obvious, are great.

They are so great that many people are impatient, unwilling to recognize the complexities of the problem, impatient of the traditions of the medical profession which have endured through the ages by passing through the filter of the survival of the fittest. They are likely to look upon medical services as something that can be bought and sold like shoes or potatoes. If folks are shoeless or hungry the government may, and usually does to some degree, supply the wants. If folks are sick and unable to buy private medicine, why, it is asked, should not the government give them public medicine?

The problems of keeping people well are not quite so simple as the problems of feeding them or clothing them, however complex these may become at times. They are difficult because there is no way to supply in wholesale quantities the most essential thing in medicine, the relations between one individual and another. These cannot be bought in carload lots to meet emergencies. They cannot be stored in elevators like wheat or corn.

Whatever program is adopted must be formulated with this in mind. Otherwise it is bound to be indifferently beneficial to the people. The physician must remain "the master in the house of medicine." He must be kept free from political control. Any set-up which has not his complete approval and sincere cooperation hardly can hope to succeed.

A larger government activity in the field of medicine should come gradually, with much testing and proving, through the expansion of the functions which already exist.

THE PROBLEM OF HEALTH

The New York Times, July 25

Last week organized medicine, labor, hospital executives, industry, farm federations, women's organizations, public health officials, social workers, New Deal administrators discussed in Washington the extension of medical care to millions of families now unable to pay for it. By bringing these diverse groups together the National Health Conference achieved its primary purpose. Possibly the familiar social and economic aspects of medicine were discussed at unnecessary length and hence at the expense of the professional methods whereby the highest type of care can be brought to the groups and regions that need it most. But much was gained by letting the various organizations speak their minds. Especially significant was the demand of all sections of organized labor and agriculture for private and governmental action.

That local, state and federal governments will be called upon to lend financial aid in solving the problem of medical care there is no longer any doubt. But how are appropriations to be kept within reasonable limits? In fairness it must be said that the most alarming proposals came from the government's Technical Committee on Medical Care. It advocated compulsory health insurance and the ultimate expenditure of \$850,000,000 annually for ten years by governmental agencies to meet medical needs. Though tentative, there can be little doubt that this program reflects the policy of the administration. Paternalism

is to take the place of self help, though even the labor representatives agreed that private resources should be exhausted before public money is spent in expanding medical care. A vague formula which calls for federal grants-in-aid to build hospitals at large carries with it implications of a new pork barrel. There was no attempt on the part of the committee to coordinate the social, economic and medical aspects of medicine, no sign of national planning (possibly because the President prefers a federal department of health and public welfare to one limited to public health), no realization that the granting of financial aid is no guaranty that a medical task will be adequately performed, no acknowledgment of the relation of medical research to planning, no conception of the rapidity with which medical science progresses and hospital services change.

It is lamentable that the American Medical Association should have made so poor a showing. Beyond a polite expression of willingness to cooperate with the government in carrying out any program that may eventually be adopted, and to place its records and experience at the disposal of the government, it had nothing to offer. Possibly its spokesmen may have returned to their homes convinced that the old position can no longer be maintained and that it is the plain duty of organized medicine to recognize voluntary insurance, the group practice of medicine, the cooperative purchase of medical care as legitimate devices for bringing medical care to a large group that needs it and to set up medical standards for public and private agencies. With politically powerful labor, farm and women's organizations aroused, Surgeon General Parran may be right in predicting that public health may be the next great social issue in this country.

CONSIDERATION OF ANOTHER STEP ON THE WAY TO STATE SOCIALIZATION

Arizona Republic, Phoenix, July 22

Three events described in the news of last Wednesday, though seemingly unrelated, all bear in some measure upon a great change which has been taking place in this country and is still going on toward a complete regimentation of citizens, a reduction of them to a dead level. One of these events was Dr. Morris Fishbein's restrained discussion of the New Deal health program involving first an expenditure of \$850,000,000. Another was a development in a meeting in the National Labor Relations Board of the extent to which mere appointed agents of the government, men irresponsible to the people, men of neither ability nor standing, lay down rules in which formerly regarded constitutional rights were abrogated. This, too, was exemplified in the proceedings of the TVA investigation when it was brought out that the complainant in the proceedings could secure needed evidence from employees only under the supervision of, and by the permission of whom? What authority could give such permission except TVA which is now on trial?

But first, as to the health program. Dr. Fishbein in his address before the National Health Conference likens the pro-

gram, if there may be said to be a program at all beyond the getting rid of \$850,000,000, as has been proposed, to the recent flight to Ireland with such crazy equipment as was employed. Such a flight would be none the less foolish now than it seemed before the late successful attempt was made.

The New Deal health program relates to a matter which is by no means new. It has been considered by the Medical Association in every meeting in recent years—the wider extension of medical assistance to those who need it but are unable to pay for it. The present aid is admittedly inadequate, but for that matter there is no adequacy of good things in this imperfect world. We can only make an approach to such adequacy.

The physicians themselves have made such an approach and are aware that it must be continued without, perhaps, coming fully to an objective.

This health program seems to possess a characteristic of all New Deal programs—a crazy planning for immediate perfection. Should any plan, once adopted, appear at some stage to have given promise of success because of some unforeseen, fortuitous circumstance, we would be told, "We planned it that way." But when a New Deal plan utterly breaks down as so many of them have done, when the flow of cash which alone gave them vitality was ended, a murky silence prevailed and a new, equally unconsidered plan was substituted.

The present health program is only another instance of long range planning, of such long range that the far end of it is eluded in mist. The only feature of it that stands out with any degree of clearness is the need to spend \$850,000,000 for some purpose. Besides, in some vague way it will make possible the spending of more borrowed money to be put into circulation to relieve unemployment.

As to the long range character of the program, Dr. Fishbein convincingly said: "A program, planned in the light of conditions in this country during the last ten years cannot be a far-reaching program planned for a nation which is to go forward for the next ten years."

Then came Dr. Fishbein's unanswerable argument against the program: "It is inconceivable that any nation like the United States can look forward into a future in which there will always be 11,000,000 workers unemployed, and yet the health program planned here is a program planned on the basis of such conditions." What American could look with pleasure on that gloomy picture?

This health program is of a piece with all New Deal plans which look to complete state socialization. It would not be a far step from it to a regimentation of the country's lawyers, including able and eminent barristers and lowly shysters to the end that no citizen, however impecunious, would be denied the blessing of litigation, which, according to popular fancy, is enjoyed only by the opulent.

Under the guidance of the New Deal we are emerging from the barbaric darkness in which our ancestors stumbled and blundered some thousands of years.

GRADUATE MEDICAL EDUCATION

New York (Metropolitan Areas)

Believing that the continuous education of practicing physicians would be the greatest possible contribution that the Medical Society of the County of Kings could offer in the cause of public health, Dr. Frank D. Jennings, president of the society, appointed a joint committee on graduate education in 1922, consisting of four members from the medical society and four from the Long Island College Hospital to initiate such a program. Dr. Charles A. Gordon was the first chairman of this committee. The society sponsored Friday afternoon practical talks by distinguished guests, a series of eighty being given during the first four years of the committee's existence. These were well attended with from 400 to 700 physicians being present each week in the auditorium of the county society's building. Lectures were published later in two volumes and were widely distributed.

The second phase of Brooklyn's medical education plan was to offer local physicians bedside instruction as an adjunct to the practical lecture series. In this area physicians qualified as teachers, gained the cooperation of the commissioner of public welfare, Bird S. Coler, and were allowed to utilize the teaching material available in the municipal hospitals for the postgraduate courses. Eight private hospitals offered their facilities also. Cooperation was the keynote of this enterprise and all interested agencies were represented. By converting the larger hospitals on Long Island into active educational centers, the local practicing physicians were able to render a broader and higher type of community service.

Under the plan cooperating hospitals were open at stated hours to small groups of not exceeding eight physicians under one instructor. This extension training was given usually from 4 to 6 p. m. Thirty-four courses were offered during the first

year and seven of these were of an intensive nature. The latter were given at Long Island College Hospital and were designed for men able to devote from four to ten hours a week to study. Intensive instruction was given in such subjects as applied and regional anatomy, heart and gastro-enteric diseases, gynecology and gynecologic pathology, proctology and surgical pathology, ophthalmology and otolaryngology. Fees of from \$30 to \$100 were charged for from one to six months' training. These fees were based on the cost of material and equipment. In the extension courses where periods of one hour each week for eight weeks were devoted to instruction, fees of \$10 were charged in most instances. Each applicant was required to list his name, address, source and date of doctor's degree, where and when licensed, type of practice engaged in and courses applied for.

The registrars at Long Island College Hospital and at the Library of the Medical Society of the County of Kings have kept accurate records of the interest shown in the various courses offered each spring and fall. In general medicine the courses most frequently given over the past fifteen years have been in heart diseases, diabetes, gastro-enterology, allergy, clinical medicine, respiratory diseases, including tuberculosis, blood diseases and therapeutics. Attendance records over the last four years show greatest interest in therapeutics, communicable diseases, allergy, heart diseases and gastro-enterology. In general surgery, courses in diseases of the thyroid, abdomen, chest and rectum, and in orthopedic surgery, fractures and varicose veins have been most frequently given. Courses best attended were in thyroid diseases, proctology, chest surgery and general and traumatic surgery. In obstetrics, training in antepartum care and manikin practice were most frequently desired. In pediatrics, instruction in endocrine diseases, infant care, congenital syphilis and infant feeding were frequently demanded. Courses have also been given in genito-urinary diseases, pathology, especially clinical, hematology and clinical pathologic conferences, and dermatology, syphilis and physical therapy.

During the first four years that extension training has been offered in Brooklyn, 209 courses have been given and for these 955 physicians enrolled; 428 of the registrants took two or more courses. During the last four years seventy-seven courses have been given and have been attended by 699 physicians. Extension training now being given in Brooklyn is available to the general medical profession. Dr. Paul L. Parrish is chairman of the joint committee on postgraduate education, which includes the dean of the Long Island College of Medicine and the president of the county society as ex officio members.

The Library of the Medical Society of the County of Kings and Academy of Medicine of Brooklyn, which was established in 1844, is one of the five largest medical libraries in this country. It is housed in the society's own building. The majority of the 143,000 volumes now on hand were acquired through gifts or bequests of physicians; 1,562 medical and dental periodicals are currently received. During 1937, 16,570 readers used the library, consulting 64,511 volumes and withdrawing 12,702.

The New York Academy of Medicine formed a standing committee on medical education in 1924, which now consists of thirty members, including an executive secretary. Dr. Carl Eggers, chairman, is one of the twelve members of the executive committee. In a symposium on graduate medical education in 1928, graduate medical education was defined as "the organized, planful opportunity and guidance of physicians in their mental and technical development after graduation." The academy attempts to make available to physicians of metropolitan and rural sections the extraordinary opportunities for graduate study which are available in the New York area. In these endeavors the academy cooperates with the Medical Society of the County of New York, the New York City Department of Health, the local medical schools and hospitals, the New York Tuberculosis and Health Association, and other agencies concerned with continuing the training of physicians.

Annual postgraduate fortnights were begun in 1928, a special phase of medicine being chosen for each of these autumn symposiums. Such subjects as senility, infectious disease, circulatory disorders, tumors, metabolic disorders, trauma and diseases of the nervous system, gastro-enteric, respiratory and urinary tracts and of the blood have been discussed by prominent medical

educators. Clinical demonstrations and exhibits have been shown concurrently by members of the academy. A registration fee of \$3 is charged. The attendance has varied from 898 (in 1931 Disorders of Circulation) to 346 (in 1936 Trauma: Occupational Diseases and Hazards), the yearly range being from 500 to 800. In 1936 two thirds of the registrants were from greater New York, but physicians were present from seventeen states and two foreign countries. Twenty hospitals cooperated in offering their facilities that year.

All other activities of the academy are presented without charge. During the past year the committee on education gave a series of eight weekly lectures on practical obstetrics by eight obstetricians. This was a joint enterprise with the Medical Society of the County of New York. Attendance varied from 292 for the first lecture on antepartum care and diagnosis of pregnancy to 136 at the sixth lecture on postpartum and post-abortion sepsis.

Twenty Friday afternoon lectures are given each year at the academy. Speakers are chosen according to their ability to present practical material in an understandable manner. During 1937-1938 the attendance varied from 366 to 134, the largest numbers (300 or more) attending lectures on endocrine therapy and gynecology, rheumatic fever, drugs used in heart disease, pediatrics, diabetes and peripheral vascular disease. Audiences of less than 200 heard lectures on lobectomy and pneumonectomy, orthopedic surgery, measles and scarlet fever serums.

During 1936-1937 a twelve lecture series on heart disease was sponsored jointly with the New York Heart Association, the attendance ranging from 140 to 300 physicians.

Seven lectures and demonstrations on the diagnosis and treatment of syphilis were sponsored by the academy at the request of the New York City commissioner of health during the spring of 1937 and attendance averaged ninety-two. Clinics arranged on two days a week in thirteen hospitals and clinics in four boroughs were attended by from one to ten physicians each.

In the spring of 1938 six weekly lectures on diabetes mellitus were given at the academy in collaboration with the New York Diabetic Association. The attendance for the series averaged 236.

The Library of the New York Academy of Medicine is the second largest medical library in this country. It contains more than 218,000 volumes. The library is open to the public. During 1936 68,528 readers consulted its material. Approximately 60 per cent of its patrons are physicians.

The Medical Society of the County of Queens has been conducting Friday afternoon talks for physicians twice monthly over the last twelve years. Practical problems of medicine are discussed in the auditorium of the county society's building. The majority of speakers come from outside Queens County. Attendance has averaged from seventy-five to 100 physicians.

The Queens County committee on graduate education of sixteen members with Dr. Edward C. Veprovsky as chairman sponsored, until last year, a series of courses in five of the local hospitals. Such subjects as operative cadaver surgery and ear, nose and throat surgery and other courses in medicine, surgery, obstetrics and pediatrics were given. Bedside instruction of small groups of physicians with demonstrations of common clinical procedures, manikin practice and pathologic conferences characterized these programs. Fees of from \$25 to \$40 were charged for operative courses and of \$10 for others, while lectures in general medicine, malignant conditions and tuberculosis were given gratis to members of the county society at their building.

It was recommended in December 1937 that, in addition to continuing the Friday afternoon talks, steps be taken to make use of all hospital facilities in the borough of Queens for postgraduate education. The committee on graduate medical education further advised the purchase of projection equipment for showing slides and movies. A stenographic record of the postgraduate lectures was desired also.

During January and March of 1938 the Department of Health of New York City arranged with the help of the five metropolitan county medical societies to give refresher courses in pneumonia similar to those held elsewhere in the state.¹ In the

1. See Graduate Medical Education: XIV. New York (Exclusive of the Metropolitan Areas) J. A. M. A. 110: 233B (June 11) 1938.

In the New York metropolitan area there are 17,431 licensed physicians, 9,890 being members of local county societies.

Largely as a result of their own policy and public expressions, general practitioners had, especially since the passing of the Insurance Act, been suspected by the public of caring only for the money they could obtain for their services, and that was unfortunate. There were three codes of conduct in this matter. There was what he would call "the ead's code": "Get the most you can and give the least you can"; there was the gentlemen's code: "Give the most you can and take only what you need"; and there was what might be called the Quaker's code: "Get the most you can and give the best you can," which was a good enough working code for most people.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

New Health Units.—New full time health units were organized for Solano and Sonoma counties, effective July 1. Dr. Adolph Frank Brewer, Redwood City, has been appointed health officer of Solano County. There are now twenty-four counties in the state on a full time health basis.

Society News.—At a recent meeting of the Kern County Medical Society in Bakersfield Dr. Udo J. Wile, Ann Arbor, Mich., among others, spoke on the treatment of early and prenatal syphilis. He also addressed the San Joaquin County Medical Society May 5. —Dr. Francis Harold Downing, Fresno, among others, discussed the treatment of fractures before the Stanislaus County Medical Society in Modesto May 10.

Hall of Science Dedicated.—The Hall of Science of the Golden Gate International Exposition was dedicated June 17 with Dr. Ray Lyman Wilbur, president of Stanford University, as chairman. The speakers at the dedication included Drs. Irvin Abell, Louisville, Ky., President of the American Medical Association; Morris Fishbein, Chicago, Editor of THE JOURNAL, and Dr. Thomas Parran Jr., surgeon general of the U. S. Public Health Service, Washington, D. C.

COLORADO

Midsummer Radiological Conference in Denver.—The fourth Midsummer Radiological Conference will be held at the Hotel Shirley-Savoy, August 11-13, under the auspices of the Denver Radiological Club, with Dr. John S. Bouslog presiding. On the program will be:

- Dr. Wendell G. Scott, St. Louis, Diagnosis of Thoracic Diseases Other Than Tuberculosis.
- Dr. Lowell S. Goin, Los Angeles, Classification, Recognition and Differentiation of Bone Tumors.
- Dr. Orville N. Meland, Los Angeles, Irradiation Therapy of Bone Tumors.
- Dr. Ernst A. Schmidt, Denver, Roentgenological Aspect of Collapse Therapy in Pulmonary Disease.
- Dr. Nathan B. Newcomer, Denver, The Joint Changes in Hemophilia.
- Dr. Frank B. Stephenson, Denver, Fractures and Pseudofractures of the Sutures of the Skull.
- Dr. Byrl R. Kirklin, Rochester, Roentgenologic Study of the Stomach and Duodenum Following Operation.
- Dr. Kenneth D. A. Allen, Denver, Arthritis.
- Drs. William W. Wasson, Joseph E. A. Connell and Gilman E. Sanford, Denver, Errors in the Diagnosis of Spondylolisthesis.
- Dr. Leonard G. Crosby, Denver, Diaphragmatic Hernia.
- Dr. Robert R. Newell, San Francisco, Quality of Roentgen Ray: Physical Aspects.
- Dr. Paul R. Weeks, Denver, Advances in Radiation Therapy.
- Dr. Edward J. Meister, Denver, Irradiation Therapy in the Treatment of Mixed Cell Tumor of the Parotid.
- Dr. Elizabeth H. Newcomer, Denver, Treatment of Carcinoma of the Breast: Technic, Complication and Results.
- Dr. Ralph E. Herendeen, New York (subject to be announced later).

A joint meeting with the Medical Society of the City and County of Denver will be held on the first day. Dr. Kirklin will deliver the Samuel B. Childs Lecture on "Clinical Indications for Roentgenologic Examination of the Gastrointestinal Tract," and Dr. Herendeen, the Sanford Withers Lecture. Round table discussions will be conducted Friday and Saturday afternoons on problems of diagnostic radiology and therapeutic radiology with Drs. Harmon P. Brandenburg, Denver, and George A. Unfug, Pueblo, presiding, respectively.

DISTRICT OF COLUMBIA

Dr. du Vigneaud Goes to Cornell.—Vincent du Vigneaud, Ph.D., since 1932 professor of biochemistry and head of the department, George Washington University School of Medicine, Washington, has been appointed head of the department of biochemistry at Cornell University Medical School, succeeding the late Stanley R. Benedict, Ph.D. Dr. du Vigneaud received his degree of doctor of philosophy at the University of Rochester in 1927.

Five Chiefs and a Business Manager Appointed.—In accordance with an expanded health program in the District, four chief medical officers have been appointed to supervise separate divisions of Gallinger Hospital: Dr. James Ross Veal, chief medical officer in surgery; Dr. Albert J. Sullivan, chief medical officer in medicine; Dr. Lewis K. Sweet, chief

medical officer in pediatrics; Dr. Charles P. Cake, chief medical officer in tuberculosis, and Dr. John Parks, chief medical officer in obstetrics. All appointments were effective July 1. Lieut. Col. Herbert Bainbridge Hayden, U. S. Army, retired, has been appointed business manager of the district health department as a part of the enlarged program.

GEORGIA

University News.—An appropriation of \$3,000 from the Abbott Laboratories of North Chicago, Ill., for the continuation of research work on malaria at Emory University has been announced by officials of the school of medicine. The research, being conducted on canaries, is directed toward finding new drugs for the control and treatment of malaria. Elizabeth Gambrell, M.S., instructor in bacteriology and pathology at the school, will supervise the experiments.

New Superintendent of Grady Hospital.—Dr. James Moss Beeler, superintendent, Spartanburg General Hospital, Spartanburg, S. C., has been appointed to a similar position at the Grady Hospital, Atlanta. Dr. Russell H. Oppenheimer, dean and professor of medicine, Emory University School of Medicine, has been acting superintendent since Mr. John B. Franklin resigned as head of the hospital a few months ago. Dr. Beeler was born in Clinton, Ky., graduating from the University of Louisville School of Medicine in 1917. He served as director of the department of mental hygiene at the South Carolina State Hospital, Columbia, later becoming superintendent of the Spartanburg hospital.

ILLINOIS

Personal.—Dr. Albert J. Roberts, Ottawa, has resigned as medical director of the La Salle County Tuberculosis Sanatorium, a position he had held since the institution was founded in 1919. —Alumni of Northwestern University voted a merit award to Dr. Frank A. Norris, Jacksonville, at the annual reunion recently.

Chicago

Dr. Best to Lecture.—Dr. Charles H. Best, professor of physiology, University of Toronto Faculty of Medicine, will address a joint meeting of the Institute of Medicine of Chicago with the Chicago Society of Internal Medicine October 28 at the Palmer House. His subject will be "Heparin and Thrombosis."

Surgical Prize Established.—The Chicago Surgical Society announces the establishment of an annual prize of \$250 to be awarded to some young physician devoting himself to surgery in Chicago, who is not a member of the Chicago Surgical Society, for meritorious work in one or both of the fields of experimental and clinical surgery. Manuscripts for this year's award should be submitted to the secretary of the society, 54 East Erie Street, not later than March 1, 1939. The committee on selection reserves the right not to award the prize if work of merit is not submitted.

General McCloskey Appointed Warden of Cook County Hospital.—Brig. Gen. Manus McCloskey, U. S. Army, retired, has been appointed warden of Cook County Hospital, succeeding Mr. Michael Zimmer, resigned. General McCloskey is a native of Pittsburgh, 64 years of age, a graduate of the U. S. Military Academy, Army School of the Line, and Army Staff College. After many years of army service in the Philippines, China, France and the United States he became commandant at Fort Sheridan, near Chicago, Ill., in 1930, and last April was retired. He has received the Distinguished Service Medal and the Croix de Guerre.

IOWA

Spotted Fever in Buchanan County.—A case of Rocky Mountain spotted fever was reported to the state department of health from Buchanan County. A farmer's wife became ill June 7 with headache, backache, weakness, gastric discomfort, anorexia and fever. An eruption appeared June 10, scattered macular lesions of "match head" size being visible on the arms, legs and back. The state hygienic laboratory, to which a blood specimen was sent June 17, reported a positive agglutination reaction with the Weil-Felix test in a dilution of 1:160. A second blood specimen obtained June 26 showed agglutination in the 1:640 dilution. The patient gave no history of tick bite or of a tick having been found on the body but recalled that a wasp or some kind of insect had stung her about three weeks preceding the present illness. According to the state medical journal, the patient lost 27 pounds in weight, the illness was not of a serious nature and the recovery was uneventful.

MARYLAND

Red Cross Offers Blood Transfusion Service.—The Baltimore chapter of the American Red Cross recently launched an appeal for blood donors following its establishment of a transfusion bureau. The service is intended for indigent patients and will be supplied free of charge to cooperating hospitals, physicians and recipients. The bureau aims to supply a small but vital deficit in the transfusion requirements of the community; to avoid all encroachment on the efficiency of the existing sources of supply of donors whether paid or voluntary, and to protect the donors who generously volunteer to furnish this free service from all exploitation or unskilful and inconsiderate handling. To protect the health of the voluntary donor certain safeguards have been adopted including, for example, regulations governing the type of gage to be used and care during and after bleeding. Dr. Charles C. W. Judd is director of the new bureau.

MASSACHUSETTS

Hospital News.—The Carney Hospital Alumni Association recently observed its fiftieth anniversary at the Copley Plaza, Boston. Dr. Warren F. Draper, Washington, D. C., was the guest speaker.

Personal.—Dr. Michael F. Burke, Natick, associate medical examiner of the eighth Middlesex district for the past eighteen years, has been appointed medical examiner, succeeding Dr. Michael James Shaughnessy, Framingham, it is reported. —Dr. Stanton J. Ten Broeck, Orange, was recently given a reception in honor of his completion of forty-five years' service to the community.

Society News.—Frank E. Wing, director of the Boston Dispensary, was elected president for three years of the Hospital Council of Boston at its third annual meeting June 28. Dr. Charles F. Wilinsky is secretary. —The New England Heart Association was addressed June 22 in Boston by Dr. George W. Pickering, Herts, England, on high blood pressure. —Dr. Frederick T. Lord, Boston, discussed pneumonia before the Norfolk South District Medical Society May 5.

NEW JERSEY

Society News.—Dr. Marion B. Sulzberger, New York, discussed "Allergy from Simple Chemicals" before the Hudson County Medical Society in Jersey City May 3. —Dr. Harvey M. Ewing, Montclair, addressed the Sussex County Medical Society, Newton, recently on treatment of heart disease.

Certificate for License to Marry.—Any person seeking a license to marry in New Jersey must first show a certificate from a licensed physician, stating that the applicant has submitted to a blood test for syphilis and has been found to be free from evidences of the disease, in accordance with the law which went into effect July 1.

State Medical Election.—Dr. Stuart Zeh Hawkes, Newark, was named president-elect of the Medical Society of New Jersey at the annual meeting in Atlantic City in May and Dr. William J. Carrington, Atlantic City, became president. Dr. Alfred Stahl, Newark, was elected secretary. The next annual session will be in Atlantic City.

NEW YORK

Balneologic Society Offers Symposium.—The newly formed Balneological Society of Saratoga Springs will hold its first annual symposium on the recent advances in gastroenterology, cardiovascular diseases, rheumatism and allied diseases, September 19-22. The society was recently organized with Drs. Moses Weiss as president, Benjamin L. Grodnitzky vice president, and Maurice Zimmerman, 117 Circular Street, Saratoga Springs, secretary. Physicians interested are asked to register for the meeting before August 15.

Septic Sore Throat from Raw Milk.—Thirty-one cases of septic sore throat occurred in May among employees of a milk collecting station and their families in a village upstate. All the patients had used raw milk from the collecting station. Milk for the employees was drawn from the cooler at a definite time each day and it appeared possible that the employees' supply might come from a single farm. Examinations were made of a stained smear of a sample of pooled milk from each farm. The smear of the milk from one farm stood out from all others with a profusion of leukocytes and clumps of chained cocci. The investigators found on this farm one cow infected with hemolytic streptococcus. Tracing the cow back to the original owner, the investigators found that the

caretaker and his mother reported that they had attacks of sore throat in December 1937. It was believed that this man was the original source of the infection; his throat culture was positive for hemolytic streptococci May 11.

New York City

Annual Graduate Fortnight.—The eleventh annual graduate fortnight of the New York Academy of Medicine will be held October 24-November 4. The theme of this year's session is diseases of the blood and blood-forming organs. The program includes a scientific exhibit, clinics, and papers by the following speakers:

- Dr. George R. Minot, Boston, General Aspects of the Etiology, Diagnosis and Treatment of Macrocytic Anemias.
- Dr. Cornelius P. Rhoads, Macrocytic Anemia of Sprue and Allied Conditions.
- Dr. Maurice B. Strauss, Boston, Neural Manifestations and Their Treatment.
- Dr. Cyrus C. Sturgis, Ann Arbor, Differential Diagnosis and Some Observations Concerning Treatment.
- Dr. Clark W. Heath, Boston, Etiology of Iron Deficiency.
- Dr. Louis K. Diamond, Boston, Iron Deficiency Anemia in Infancy.
- Dr. Roy R. Kracke, Emory University, Ga., The Neutropenic Diseases.
- Dr. William Bloom, Chicago, The Origin and Developmental Potentialities of Blood Cells.
- Dr. Harrison S. Martland, Newark, The Reticulo-Endothelial System.
- Dr. Russell L. Haden, Cleveland, Diagnostic Significance of Changes in Erythrocytes.
- Dr. Maxwell M. Wintrobe, Baltimore, Diagnostic Significance of Changes in Leukocytes.
- Dr. John R. Paul, New Haven, Infectious Mononucleosis.
- Dr. Claude E. Forkner, A Clinical and Pathological Discussion of the Common and Unusual Types of Leukemia.
- Dr. Henry Jackson Jr., Newton, Mass., Certain Practical Aspects of Hodgkin's Disease and Allied Disorders.
- Dr. James Ewing, The General Pathology of Lymphosarcoma.
- Dr. Paul Reznikoff, Polycythemia.
- Dr. Thomas B. Cooley, Detroit, Diseases of the Blood in Infancy and Childhood.
- Dr. Nathan Rosenthal, Classification and Treatment of Purpura.

There will be a session on diseases of the spleen and therapy with the following speakers: Drs. Allen O. Whipple, William P. Thompson, Louis M. Rousselot, Robert H. E. Elliott Jr., Lloyd F. Craver and Charles F. Tenney. Dr. William H. Howell, Baltimore, will deliver the Wesley M. Carpenter Lecture Thursday evening on "Hemophilia."

NORTH CAROLINA

Memorial for Dr. McBrayer.—Two committees representing the North Carolina Tuberculosis Association and the state medical society have been appointed to study plans to raise funds for a suitable memorial to the late Dr. Louis B. McBrayer, Southern Pines. Dr. William H. Smith, Goldsboro, has been appointed chairman of the committee representing the tuberculosis society and Dr. George G. Dixon, Ayden, of the state medical society.

Society News.—The Mecklenburg County Medical Society was addressed June 7 by Drs. William A. Hamer on "Anesthetic Deaths and Their Prevention"; Charles Bunch, "Calcification of Cystadenoma of Thyroid"; and Otis Hunter Jones, "Architectures of the Female Pelvis." —At a meeting of the Iredell-Alexander Medical Society June 25 Dr. William Gerry Morgan, Washington, spoke on "Functional Disorders Affecting the Digestive Tract"; members of the local dental society attended the meeting.

OHIO

University News.—The Commonwealth Fund has made a three year grant to Western Reserve University for a study of the mechanism of heart failure, to be expended under the direction of Dr. Joseph T. Wearn, professor of medicine.

Personal.—Dr. Carl T. Kirchmaier, Cincinnati, has been appointed medical director of the Columbia Life Insurance Company to succeed the late Dr. Frank B. Cross. —Dr. Elliott D. Moore, New Philadelphia, was the guest of honor at a dinner given by the Tuscarawas County Medical Society recently, celebrating his completion of fifty years of practice. —Dr. Edward J. McCormick, Toledo, was elected Grand Exalted Ruler of the Benevolent and Protective Order of Elks at the annual convention in Atlantic City July 12.

Sixtieth Anniversary of Woman's Hospital.—The Woman's Hospital, Cleveland, celebrated June 12 the sixtieth anniversary of its founding. The hospital was started June 12, 1878, by Drs. Myra Merrick and Kate Parsons as a small dispensary to give free medical care to women and children who could not provide it for themselves. It also served as a training center for women physicians, who were not then permitted to serve internships in Cleveland hospitals. In 1912, the dispensary system was not large enough for all who sought attention and the hospital proper was built beginning with twelve beds. It now has 125 beds.

OKLAHOMA

Society News.—At the quarterly meeting of the Southern Oklahoma Medical Association at the State Veterans' Hospital, Sulphur, June 7, the speakers were Drs. Leo J. Starry, Oklahoma City, "Management of Postoperative Distention and Ileus"; Herbert Dale Collins, Oklahoma City, "Treatment of Infections of the Hand"; Robert U. Patterson, Oklahoma City, "The University Hospital and the General Practitioner," and John Hoyle Carlock Jr., Ardmore, "Analgesia and Amnesia." Dr. George L. Carlisle, Dallas, Texas, conducted a diagnostic heart clinic.

PENNSYLVANIA

District Meeting.—Among others, Dr. Louis H. Clerf, Philadelphia, addressed the Eleventh Council District Medical Society in Washington, July 27, on "Bronchoscopy and Pulmonary Infections." The annual session of the women's auxiliaries of the district was held the same day; Dr. Rufus S. Reeves, Philadelphia, spoke on "Preventive Information to the Public Through the Woman's Auxiliary."

Philadelphia

Dr. Schumann Resigns as Professor of Obstetrics.—Dr. Edward A. Schumann, since 1935 professor of obstetrics, University of Pennsylvania School of Medicine, has resigned effective at the end of the present school year, according to the *Pennsylvania Gazette* July 1. Dr. Schumann graduated in medicine at Pennsylvania in 1901. A member of the staffs of many hospitals, he served on the faculty at Jefferson Medical College from 1916 to 1924. Other changes in the faculty announced at this time include:

Dr. Albert C. Buckley to professor of clinical psychiatry.
Dr. Donald M. Pillsbury to associate professor of dermatology and syphilology.
Dr. Carl E. Bachman to professor of obstetrics.
Dr. Douglas P. Murphy to assistant professor of obstetrics.
Drs. Mitchell I. Rubin and Edward S. Thorpe to assistant professors of pediatrics.
Dr. Arthur M. Walker to associate professor of pharmacology.

Pittsburgh

Large Hospital Constructed Without Much Noise.—A thirteen story unit in the Pittsburgh Medical Center is being constructed without noise, it is reported. This unit, Woman's Hospital, will be the first welded building in the city. To meet the stipulation of the Woman's Hospital board of directors that the structure be welded together, the city council granted a special construction permit pending passage of a new ordinance incorporating welding regulations in the building code. Ordinarily fifteen tons of rivets would have been pounded into the steep framework, but the welders substituted electric power to merge 2,300 pounds of welding rods with the structural steel. Woman's Hospital will be devoted exclusively to the study and treatment of diseases peculiar to women.

SOUTH CAROLINA

State Society Honors Its Secretary.—The *Journal of the South Carolina Medical Association* for July has been dedicated to Dr. Edgar A. Hines, Seneca, in recognition of his many years of service to organized medicine. Similar tribute was paid to Dr. Hines at the recent annual meeting of the state medical society at Myrtle Beach, when he was presented with a silver tray, pitcher and goblets. Dr. Hines graduated at the Medical College of the State of South Carolina in 1891. He joined his state society in 1894 and in 1896 he was elected secretary of the Fourth District Medical Society. Later he became its president. April 19, 1910, at Laurens, he was elected secretary of the South Carolina Medical Association and Nov. 2, 1911, editor-in-chief of the state journal, after three years' service as associate editor. With the exception of the year 1929, Dr. Hines has served continuously as a member of the House of Delegates of the American Medical Association since 1910. He has been a member of the state board of health since 1909.

TEXAS

Dr. Carter to Retire as Dean.—Dr. William S. Carter will retire this year as dean of the University of Texas School of Medicine, Galveston, it is announced. In 1935, following the death of Dr. George E. Bethel, Dr. Carter was recalled to the position, having served in a similar capacity from 1903 to 1922. He first joined the faculty in 1891 as assistant demonstrator of pathology, subsequently serving as assistant professor of comparative physiology, demonstrator of physiology and professor of physiology. He was associate director of the division of medical sciences of the Rockefeller Foundation from 1922 to 1934.

VIRGINIA

Special Society Meeting.—The annual meeting of the Virginia Society of Ophthalmology and Otolaryngology was held in Williamsburg in May with Drs. Alan C. Woods, acting professor of ophthalmology, Johns Hopkins University School of Medicine, Baltimore, and William H. Jenkins, clinical professor of otorhinolaryngology, George Washington University School of Medicine, Washington, D. C., as the speakers. Dr. Charles T. St. Clair, Bluefield, W. Va., was elected president; Dr. Karl S. Blackwell, Richmond, vice president, and Dr. Mortimer H. Williams, Roanoke, secretary.

GENERAL

Examination in Obstetrics.—The next written examination and review of case histories of group B applicants by the American Board of Obstetrics and Gynecology will be held in various cities of the United States and Canada on Saturday November 5. Applications should be filed no later than September 5. The next general examination for all candidates (groups A and B) will be held in St. Louis in June 1939, immediately prior to the meeting of the American Medical Association. Application blanks and additional information may be obtained from Dr. Paul Titus, 1015 Highland Building, Pittsburgh (6), Pa., the applications to be filed not later than sixty days prior to the scheduled dates of examination.

Meeting of Committee of Physicians.—Dr. Richard M. Smith, Boston, was elected chairman of the Committee of Physicians July 21 at its first annual meeting at the Cornell University Medical College, New York. Drs. Hugh Cabot, Rochester, Minn., and William J. Kerr, San Francisco, were elected vice chairmen, and Dr. John P. Peters, New Haven, Conn., was reelected secretary. Dr. Russell L. Cecil, New York, the retiring chairman, was elected honorary chairman. At the end of the all day session, which was closed to the press, Dr. Peters issued a brief statement on behalf of the committee expressing "appreciation of the efforts of the government to initiate action toward the improvement of medical care," according to the *New York Times*.

Foundation for Clinical and Surgical Research.—Plans are under way to establish a Foundation for Clinical and Surgical Research to function nationally as a nonprofit and charitable organization. The objective is to establish serum centers for the collection and distribution of lyophil convalescent serum. The foundation seeks to be equipped to do research for approved hospital groups provided the problem is worthy of investigation and the aim humanitarian; to furnish abstracts or publications of current medical and surgical literature from the foundation library, and to investigate disease with a view to its prevention, eradication or scientific treatment. The incorporators will be Charles E. Beury, LL.D., Edward G. Budd, J. L. Jones 3d, Dr. Edwin H. McIlvain, W. W. Pennewill, Rev. Philip Steinmetz, H. S. Walker and Dr. John O. Bower, clinical professor of surgical research at Temple University. The plan of organization contemplates also a board of sponsors consisting of business, civic and professional leaders.

Special Society Elections.—Dr. Joseph B. Bilderback, Portland, Ore., was elected president of the American Academy of Pediatrics at its annual meeting in Del Monte, Calif., June 9-11, and Dr. Henry F. Helmholz, Rochester, Minn., was installed as president. The next annual session will be in Cincinnati.—Dr. Edward V. L. Brown, Chicago, was named president-elect of the American Ophthalmological Society at its annual meeting in San Francisco June 9 and Dr. Frederick T. Tooke, Montreal, Canada, was installed as president. The next annual meeting will be in Hot Springs, Va.—Dr. William C. Sandy, Harrisburg, Pa., was chosen president-elect of the American Psychiatric Association at its annual meeting in San Francisco June 6-10, and Dr. Richard H. Hutchings, Utica, N. Y., was installed as president. Dr. Arthur H. Ruggles, Providence, R. I., was elected secretary. The 1939 meeting will be in Chicago the week of May 8.—Mr. James F. Ballard, Boston, was elected president of the Medical Library Association at the annual meeting in Boston June 28-30, and Miss Janet Doe, New York, secretary. Next year's meeting will be in Newark, N. J.

Studies on Industrial Disease.—Scientific investigations of "mixed" dusts and "protector" dusts, of x-ray apparatus and technic and of engineering measures for control of air pollution were undertaken during the past year by the Air Hygiene Foundation of America, a cooperative organization with headquarters at the Mellon Institute, Pittsburgh, and supported by 200 industrial concerns. At Saranac Lake, N. Y.,

under the direction of Dr. Leroy U. Gardner, a study is being made of dusts in which silica is only one component with a view to determining the effects of the other dusts on the silica hazard. The x-ray work is being carried on at the University of Pennsylvania under the direction of S. Reid Warren Jr., Se.D. Philip Drinker, Ch.E., professor of industrial hygiene, Harvard School of Public Health, Boston, is in charge of the foundation's engineering project, which deals with the development and improvement of engineering measures for the control of such industrial pollutants as dusts, fumes and gases through mechanical means. During the past year also Theodore C. Waters, chairman of the Maryland Occupational Disease Commission and a member of the foundation's legal committee, prepared a review of compensation legislation. A survey to determine "concentration of volatile sulfur compounds in atmospheric air," undertaken in the summer of 1936, was concluded in October 1937. Mobile laboratories were operated in five metropolitan districts: St. Louis and East St. Louis, Pittsburgh, Detroit, Philadelphia and Camden and Washington, D. C. Occasional determinations were made in several other cities. The foundation also collected information from more than 100 institutions, research centers and private laboratories in order to catalogue what fundamental research is being done in the field of industrial health.

Government Services

Consignment of Lash Lure Confiscated

The first seizure under the new federal food, drug and cosmetic act of June 25 was made when the federal district attorney at Milwaukee, July 13, caused a consignment of "Lash Lure the New and Improved Eyebrow and Lash Dye" to be confiscated. The government alleges that this product is adulterated in that it contains a poisonous or deleterious substance, a coal tar preparation, paraphenylenediamine. The dye is manufactured by the Cosmetic Manufacturing Company of Los Angeles. Instances of severe eye injury to women who have used the product are on record. Until the passage of the new food, drug and cosmetic act the government was unable to prevent continued traffic in this article. The company apparently sought to protect itself against damage suits by enclosing in each package slips to be signed by the customers absolving the beauty shop, distributor and manufacturer from any blame if the use of Lash Lure results in injury. Under the new act the interstate shipment of dangerous cosmetics is immediately prohibited. The act, in most of its provisions, does not become effective until June 25, 1939.

Dr. Draper Appointed Executive Officer

Dr. Warren F. Draper, assistant surgeon general, U. S. Public Health Service, Washington, D. C., has been appointed executive officer of the service, a newly created position effective July 1. He will be succeeded as assistant surgeon general, in charge of personnel and accounts, by Sr. Surg. Paul M. Stewart, who for the past three years has been medical director of the U. S. Employees Compensation Commission. Dr. Draper will serve as representative of the surgeon general in matters not requiring his primary consideration and again in departmental matters and in those involving contacts with other departments and governmental agencies except those falling within the routine duties of the division chiefs. He will check all official communications, except those of a routine nature, requiring the personal signature or check of the surgeon general, serve as budget officer and assume such other duties as may be assigned by the surgeon general. Dr. Draper was born in Cambridge, Mass., in 1883. Following graduation from Harvard University Medical School, Boston, in 1910, he entered the public health service as assistant surgeon and was detailed to the San Francisco Quarantine Station at Angel Island. From 1922 to 1931 he was assistant surgeon general in charge of the division of domestic quarantine. He served as health commissioner of Virginia from 1931 to 1934, when he was made chief of the division of personnel and accounts of the service. He has been a member of the House of Delegates of the American Medical Association since 1925. A graduate of the University of Cincinnati College of Medicine, Cincinnati, in 1914, Dr. Stewart was commissioned in the service the same year. He was first stationed at the U. S. Marine Hospital, Baltimore, then at Ellis Island. The next three

years he spent in studying rural sanitation in South Carolina, Tennessee and Missouri and working in connection with the great outbreak of infantile paralysis in 1916 in New York and with pellagra in South Carolina. Subsequently he served as investigator during influenza epidemics during the war, as executive officer to the marine hospital in Staten Island, N. Y., and quarantine officer in Italy. In London he inaugurated medical inspection of aliens departing for the United States. He was medical officer in charge of the U. S. Marine Hospital, Hudson Street, New York, becoming medical director of the compensation commission in 1935.

Regulations Governing New Drugs in Interstate Commerce

Most of the penal provisions of the federal Food, Drug and Cosmetic Act do not become effective until June 25, 1939. The penal provisions relating to the introduction of new drugs into interstate and foreign commerce and into commerce in the District of Columbia and in the territories became effective, however, immediately on the approval of the act by the President. Regulations to carry those provisions of the act and certain others into effect were promulgated (Federal Register 3:1846 [July 23] 1938) July 22 by the acting secretary of agriculture. Neither the act itself nor the recently promulgated regulations cover viruses, scrums, toxins and analogous products for human beings, which remain under the supervision and control of the surgeon general of the public health service. According to a press release issued by the Department of Agriculture, the regulations were issued without preliminary hearings in order that they might become effective at the earliest possible date. The secretary of agriculture, however, will welcome constructive suggestions; on the basis of such suggestions he will announce such revisions of the regulations as may be indicated and make provision for public hearings for their consideration.

The federal Food, Drug and Cosmetic Act itself forbids the introduction of a new drug into interstate or foreign commerce or even into local commerce in the District of Columbia or the territories, included for brevity under the term "interstate commerce," unless an application has been filed with the secretary of agriculture and "is effective with respect to such drug." Drugs sold on the prescriptions of physicians, dentists and veterinarians are not exempted from that prohibition. An application may become effective simply by lapse of time after it has been filed, without action by the secretary. The secretary may by affirmative action make it effective or he may definitely reject it.

1. The law apparently contemplates that action will ordinarily be taken by the secretary within sixty days after the filing of an application. It provides that if he has taken no action within that period the application automatically becomes effective and the new drug covered by it may be sold. Under this arrangement, if the secretary of agriculture is unable to pass judgment on an application within the time allowed by law he can without assuming responsibility for such drugs and without keeping them off the market allow the application to become effective and the drug to be sold simply by lapse of time. The secretary may, however, extend the sixty day period, by notice to the applicant, if he deems a longer time necessary for the study and investigation of the drug, but not to exceed 180 days after the filing of the application. The secretary, however, may at any time after an application has become effective, whether simply by lapse of time or otherwise, after notice and hearing, suspend its effectiveness if it appears that the drug is unsafe for use under the conditions of use recommended in the application or if the application contains any untrue statement of material fact.

2. At any time after the filing of an application, the secretary may issue an order refusing to permit the application to become effective, and if he does so the new drug covered by the application cannot lawfully be introduced into interstate commerce. He may, however, on reconsideration, if the facts so require, rescind that order and allow the application to become effective and the drug to be sold.

3. The secretary may at any time after the filing of an application, if he is satisfied that there are no grounds for issuing an order refusing to permit an application to become effective, notify the applicant of that fact, and the application thereupon becomes effective and the drug can lawfully be introduced into interstate commerce. If, however, the secretary subsequently finds cause for so doing, he may, after due notice and hearing, suspend the effectiveness of the applica-

tion and thereby exclude the drug from interstate commerce. Applicants who feel themselves aggrieved by any order of the secretary may appeal to the courts for redress.

Certain drugs, however, are exempted from the restrictions of the act even though they are not recognized by qualified experts as safe for use under conditions stated in the labeling. These include all drugs that at any time whatever prior to the enactment of the new law, June 25, 1938, were subject to the Food and Drugs Act of June 30, 1906, as amended, so long as their labeling continues to contain the same representations concerning the conditions under which they are to be used that it contained during the earlier period. The Food and Drugs Act of 1906, as amended, defines the term "drug" so as to make it include "any substance or mixture of substances intended to be used for the cure, mitigation, or prevention of disease of either man or other animals." It would seem, therefore, as if any nostrum that was sold in interstate and foreign commerce prior to the enactment of the new act will not come within those of its provisions that restrict the sale of new drugs, even though not recognized by qualified experts as safe for use under conditions stated in the labeling, so long as there is no change in the instructions in the labeling as to the conditions under which it is to be used. Such nostrums are, of course, subject to the other provisions of the act.

According to the act itself, new drugs come within two categories: First, drugs the composition of which is such that they are not generally recognized, among experts qualified by training and experience to evaluate the safety of drugs, as safe for use under the conditions prescribed, recommended or suggested in the labeling thereof. Second, drugs the composition of which is such that they, as a result of investigations to determine their safety for use under conditions prescribed, recommended or suggested in the labeling, have become so recognized but which have not, otherwise than in the course of such investigations, been used to a material extent or for a material time under such conditions.

Under the regulations just promulgated by the acting secretary of agriculture, the definition of new drugs stated in the act is elaborated. Four conditions are laid down under which a substance is to be regarded for the purposes of the act as a new drug: 1. If any substance entering into its composition, whether an active substance or a menstruum, excipient, carrier, coating or other component, is new "for drug use." 2. If a combination of two or more substances is "new for drug use," even though no substance that enters into the composition is new for such use. 3. If two or more substances enter into a combination for drug use in proportions different from the proportions in which they have previously entered into such combination. 4. If the labeling of a drug prescribes, recommends or suggests a new dosage, method or duration of administration or application, or other conditions of use, even though the same drug has been previously used for drug purposes in different dosage, or in different methods or duration of administration or application, or under different conditions.

In order that the new act and regulations may not interfere with the proper scientific and professional investigation of substances not in general medicinal use but which possibly have medicinal properties, provision is made for supplying such substances to experts for study. The regulations require, however, that a substance intended solely for investigational use by experts qualified by scientific training and experience to investigate the safety of drugs, in order to be exempt from the operation of the act so far as it relates to new drugs, must be labeled "For investigational use only" and must be delivered only to such experts and used by them solely for purposes of investigation. A person proposing to introduce any such substance into interstate or foreign commerce or into commerce in the District of Columbia or the territories, for purposes of investigation, must hold a signed statement from each expert to whom it is to be delivered in which the expert pledges himself not to use the drug otherwise than in the investigation to be conducted by him, unless and until application is made for permission to distribute the substance commercially as a drug and that application has become effective. To qualify as an expert under this regulation a person must have adequate facilities at his command for the investigation that he proposes to conduct.

Other regulations set forth the details of the procedure to be followed in introducing a new drug commercially. Others lay down detailed rules regarding the collection of official samples of foods, drugs and cosmetics.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 11, 1938.

A National Union of Medical Students

Though there have been for some time unions of students in the British Isles, one devoted entirely to medical students has only just been formed. It will embrace the students of England, Wales, Scotland and Ireland. One activity of the new union is the organizing of tours to foreign clinics. A tour has just taken place to Sweden. Clinical visits will also be arranged between the medical schools of England. The union is building up a collection of cinematograph films of surgical operations, of the actions of drugs and of the results of treatment. From July 18 to July 21 a conference of delegates and observers will be held in London, when there will be opportunities for visiting the hospitals. A subject for discussion, "The Training of the Doctor," has been arranged.

The Unpopularity of Nursing as a Career

The shortage of nurses was described in a letter in THE JOURNAL June 18. Evidence submitted by the Women's Employment Federation to a government committee on nursing services explains this. The federation is an association of 282 organizations, including universities, colleges, schools, training centers, professional societies and firms concerned in the employment of women. Its work includes the collection of information on careers and the training for them, and the distribution of this to girls at schools and colleges and to other women in need of advice. The federation has found that nursing is unpopular among the majority of girls receiving secondary education and their parents. To ascertain what are the objections which prevent satisfactory recruitment of nurses, secondary schools were circularized and asked to ascertain the opinion of the senior girls on the advantages and disadvantages of the career of nursing. The following main conclusions emerged from the replies: The life of the probationer in hospitals appears definitely unattractive to the girl who has reached the sixth form of a secondary school. The parents, and to some extent the teachers, fear the overwork and breakdown of the girls during the training period. The pay is considered insufficient. The federation suggests that it would be stimulus to recruiting if a minimum of desirable conditions as to hours, accommodations, food, discipline and other matters was laid down by the Ministry of Health or by the General Nursing Council.

The Estrogenic Treatment of Senile Vaginitis

A recent development of endocrine treatment is the use of estrogen for its action on the vaginal epithelium. It changes the columnar epithelium of the child's vagina into the adult squamous type and so has proved effective in vulvovaginitis. At the Edinburgh Obstetrical Society, Dr. T. N. MacGregor showed the value of this method at the other extreme of female life. The investigations of Papanicolaou and others indicate that there are normal cyclic variations in the vaginal epithelium associated with puberty, the menstrual cycle, pregnancy and the menopause which depend on rhythmic ovarian activity. On the cessation of this activity at the menopause, atrophic changes take place in the genital organs. The length of the vagina diminishes, the lumen narrows, and the epithelium becomes thin and atrophic. The glycogen content of the epithelial cells diminishes and the reaction of the vaginal flora becomes alkaline (Cruikshank and Sharman, 1934). This atrophic condition predisposes to senile vaginitis. The barrier action of the

acid medium present in the vagina during reproductive life also is lost. Irritating uterine or cervical discharge or repeated minor trauma, such as coitus or the insertion of a douche nozzle, may produce patchy denudation of the atrophic vaginal epithelium. These areas are invaded by pathogenic organisms, and senile vaginitis results.

The treatment of this distressing condition in the past has not been satisfactory. It has consisted in local applications to the vagina, supplemented in some cases by cauterization of the hemorrhagic areas. In 1935 estrogenic treatment was introduced by Davis. Dr. MacGregor has used estradiol benzoate, which restores the atrophic vaginal epithelium to the condition which existed during reproductive life. It not only increased the vascularity of the tissue and thus promoted healing, but it increased the cellular structure subjacent to the denuded areas and caused shedding of infected tissues. It also stimulated the production and deposition in the vaginal epithelium of nutritive substances necessary for a normal vaginal flora, which, once reestablished, was inimical to invading organisms. The cessation of therapy was followed after an interval by reversion of the vaginal epithelium to the atrophic condition normal after the menopause.

The dose of estradiol benzoate varied from 5 mg. biweekly to 10 mg. daily, according to the severity of the condition and the response. Intramuscular injection was the best method of administration. Suppositories had proved disappointing, probably because the atrophic condition of the vagina militated against absorption. But this method might prove useful after the vaginal epithelium had been rejuvenated by the intramuscular injection. As a result of the treatment, eight of the fifteen patients were completely cured and have remained symptom free for periods varying from fourteen to twenty-one months. Seven patients were rendered almost symptom free, but there was still some evidence of inflammation. In four of these it was thought that the dosage had been inadequate. One case showed the effect of minor trauma in keeping up the vaginitis; 105 mg. of estradiol benzoate was given with complete relief and apparent restoration of normal epithelium. But vaginal douching was continued against advice, with the result of recurrence of mild inflammation.

The Destruction of Mosquitoes in Airplanes

Travel by air has raised the problem of the transmission of mosquitoes, which may carry the germs of yellow fever or malaria. Imperial Airways has adopted a method of disinfection in flight as soon as the plane leaves an infected area. The apparatus was devised by Dr. Park Ross, deputy chief health officer of the Union of South Africa, and Mr. Larmuth of the South African Fumigation Company. It consists of a small number of jets through which insecticide spray is ejected by the pressure of an ordinary carbon dioxide sparklet bulb. The passenger cabins are disinfected with the Phantomyst nebulizer. The insecticide used is highly toxic to insects, non-inflammable and not objectionable to passengers. The experiment was made of distributing 600 mosquitoes in various parts of an airplane when over the Solent. When the craft took the air, the sprays were released. The mosquitoes died within fifteen minutes or less of exposure except two, which appeared to be unaffected and alive next morning. The method, subject to minor improvements, will be followed by Imperial Airways, Ltd.

The Death of Professor Boas

In his obituary of Prof. Ismar Boas (THE JOURNAL, June 4, p. 1937) the Berlin correspondent did not report the circumstances of his death. The persecution to which this great man was subjected in his old age and which led to his suicide are

disclosed in the obituary contributed to the *British Medical Journal* (1:1184 [May 28] 1938) by Sir Arthur Hurst:

"Professor I. Boas, the distinguished gastro-enterologist, died a fortnight ago in Vienna at the age of eighty. His scientific career began when he became assistant to Professor Ewald at the Augusta Hospital in Berlin in 1885. Working in cooperation with Ewald he devised the test breakfast which laid the foundation for all later investigations on the chemical functions of the stomach. Though in recent years it has been to a great extent replaced by the fractional test meal, the Boas-Ewald test breakfast is still used in many Continental and American clinics. Boas was a brilliant clinician and soon gained the reputation of being the foremost gastro-enterologist in Europe. Students from all parts of the world attended his lectures and demonstrations, and his textbook on Diseases of the Stomach and Intestines was for many years the most popular work on the subject, passing through nine editions and being translated into many different languages. Boas was a tireless worker and wrote numerous valuable papers describing the results of his investigations. Perhaps his most important practical contribution to medicine was his discovery of the presence of occult blood in the stools in organic diseases of the stomach and colon. He continued to investigate the changes undergone by blood pigments in the alimentary tract until a few weeks before his death.

"In 1898 Boas founded the *Archiv für Verdauungskrankheiten*, which came to be known as *Boas's Archiv* and was the first journal of gastro-enterology published in any country. In 1920 he founded the German Gastro-Enterological Society, which meets alternate years in Berlin and Vienna.

"The advent of National Socialism made it impossible for Boas to continue his scientific career in Berlin. He was fortunate to receive an invitation to work in one of the hospitals of Vienna, where he continued to investigate problems connected with the porphyrins and published a number of important papers on the subject. He believed that he had devised a spectroscopic method by which it would be possible to distinguish the pigment derived from carcinoma from that derived from ulcer, but he died before he had time to describe the test. When finally political upheaval reached Vienna he recognized that the end of his working life had come. Still full of energy and mentally alert as ever in spite of his eighty years he found peace with an overdose of veronal. In the death of Boas the profession loses a pioneer of gastro-enterology, a man beloved by his many pupils throughout the world."

PARIS

(From Our Regular Correspondent)

July 9, 1938.

More Modifications of the Social Insurance Law

Since its introduction in 1930, the social insurance law here has been subjected to constant modification. It was thought that the almost complete revision made in October 1935 would eliminate all criticism, but this hope does not appear to have been fulfilled. In the official journal of June 16 a number of important changes were published. The former maximum salary limit of those who are obliged to be covered by social insurance is raised from 25,000 to 30,000 francs. The trimonthly premium of a worker earning 1,800 francs a month is raised from 50 to 60 francs. The daily indemnity for illness is raised from 22 to 25 francs in line with the increased cost of living. Some of the excess paper work, which was the subject of many complaints by the medical profession, has been suppressed. Relatively heavy fines will be imposed on any physician who attempts to increase his clientele of insured workers by offering fees lower than those granted to the insured by the caisses, or discharging offices. Formerly social insurance was obligatory only for those engaged in industrial pursuits, but it has now been extended to cover chauffeurs, commercial travelers and managers of chain store branches.

It is evident that social insurance is encroaching more and more on the work of the general practitioner. Formerly the insured could not claim indemnity for the first five days of any illness, but this has been reduced to three days. Any outlay for an orthopedic apparatus is reimbursed, but the insured cannot claim payment for a second one if the first one is worn out. One of the main changes concerns maternity claims, allowing hospitalization and more liberal indemnity in cases of dystocia.

Prevention of Infectious Diseases in Medical Students

Although not yet obligatory, an effort is being made by all medical schools to urge students to submit to radioscopia of the chest before entering on their first year studies. The dean of the University of Lille school of medicine has just published the following recommendations to be carried out during the first month of a student's admission to the preliminary medical year: Arrangements have been made so that not only radioscopia but a thorough physical examination of the chest can be made by the head of the medical department. This is followed by the usual tuberculin tests, which, if negative, carry a warning to the student to exercise every precaution while working in services where pulmonary tuberculosis is treated. Every student who is likely to be exposed to any of the acute infectious diseases ought obligatorily to be vaccinated against typhoid and diphtheria.

Air Embolism During Artificial Pneumothorax

At the May 27 meeting of the Société médicale des hôpitaux of Paris, Dr. R. Weismann-Netter stated that he had observed accidents in only three of more than 10,000 air insufflations in eleven years. In a fourth case, an epileptic seizure occurred immediately after insertion of the needle but before any air had entered the pleural cavity. This fourth case might have been interpreted as one of "pleural epilepsy" if inquiry had not revealed that the patient gave a previous history of frequent attacks. In two of the three cases of air embolism, as soon as the needle was withdrawn, following the first insufflation, the symptoms appeared suddenly in the form of local pain, anxiety, restlessness, pallor and a thready pulse. These symptoms were followed in a few seconds by a contralateral hemiparesis and increased reflexes, with a distinct Babinski sign in one of the two cases. The hemiparesis disappeared in a few minutes. In both cases, cough and a slight bloody expectoration confirmed the opinion that air had entered the pulmonary circulation. In the third case, following the injection of a relatively small quantity of air into the right pleural cavity while the patient was lying down, a perforation of the lung was diagnosed because of the presence of blood in the needle and bloody expectoration. There was a first stage of restlessness, anxiety, a feeling of retrosternal constriction and collapse, followed in the second stage by a left homonymous hemianopia and paresis with paresthesia of the arm. These symptoms disappeared in a few minutes, but the signs of cerebral involvement recurred seven hours later. Recovery without any sequels followed.

The majority of authors have abandoned the theory of pleural reflex as an explanation of the systemic symptoms except in rare instances in which death or generalized convulsions occur immediately after the insufflation of the air. The two stages as observed in the three cases reported by Dr. Weismann-Netter, namely a cardiac and a cerebral, respectively, are observed in all cases of air embolism. The question arises whether the embolism is the direct sequel of the insufflated air, because air embolism has been observed after simple puncture of the pleura. The localization of the cerebral symptoms in the region of the fissure of Sylvius is a clinical confirmation of the experimental work of Poix and Jacquet. A puzzling feature was the recurrence of the symptoms of cerebral involvement in the third case, seven hours after the recession of the first symp-

toms. This can be best explained by assuming a cerebral vascular spasm rather than that the recurrence should be due to another air embolism. The latter, as claimed by Sergent, Baumgartner and Kourilsky, is not due to the air itself but to a foamy mixture of air and blood.

In the discussion, Dr. Kourilsky said that the opening of a branch of the pulmonary vein is followed by marked aspiration of air because of the negative pressure in the pulmonary venous circulation. The blood churns the inspired air into a bloody foam, which in turn occludes a cerebral vessel mechanically and not as the result of a spasm.

Forty-Seventh French Surgical Congress

This year's congress of the Association française de chirurgie will be held at the Paris Medical School, October 3-8. Reports on the following subjects will be open for general discussion: treatment of fractures of the spine, to be reported by Drs. Sicard of Paris and Charbonnel of Bordeaux; clinical forms and treatment of Staphylococcus septicemias, to be reported by Drs. Patel of Paris and Moiroud of Marseilles, and primary tumors of mesoblastic origin of the soft tissues (except cutaneous and dermal structures of the extremities), to be reported by Drs. Moulouguet of Paris and Pollosson of Lyons. For information regarding the congress, address Mr. A. Vulliod, 12 rue de Seine, Paris 6.

Change of Meeting Place of International Surgical Congress

A notice appears in several French journals to the effect that the International Surgical Congress which should have been held in Vienna, Sept. 19-22, cannot take place in that city because of inability of the Austro-German members of the committee to make satisfactory local arrangements. The Belgian members of the congress, considering that it would be discourteous to those probably en route from Australia, New Zealand, China and South American countries, as well as to members who had prepared reports for the congress, to postpone the meeting, have invited the executive committee of the latter to hold the 1938 meeting at the same dates in Brussels.

BERLIN

(From Our Regular Correspondent)

June 11, 1938.

Meeting of Surgical Society

The German surgeons convened at Berlin in April. The chairman, Professor Guleke of Jena, called attention to the danger in the breaking up of surgery into so many separate specialties. The necessary collaboration was this year accomplished by a joint session with the German Society of Orthopedic Surgery and the Society for Study of Accidental Injuries and Accident Insurance.

Professor von Verschuer of Frankfurt on the Main lectured on the topic "How is the heritability of congenital bodily defects recognizable?" Defects are all regarded as deviations from the norm, based on faulty development. A pathologic hereditary predisposition need not be manifested directly post partum but may be observed later. In the establishment of a hereditary diathesis, next to the patient himself his family is the most important object of study. Extremely careful evaluation of genealogic data is, however, necessary, since the prevention of offspring is indicated only if the anomaly in question is of incontestably proved hereditary origin. One can never diagnose a defect as inherited on clinical examination alone. The author then discussed diagnosable hereditary defects, especially osteopsathyrosis and multiple exostosis, both generally conditioned by heredity. Defective conditions such as amelia and micromelia, in which all the limbs are involved,

are inherited as simple dominant characters. No doubt exists as to the heritability of the extremely rare amniotic amputations. Seemingly innocuous heritable traits can lead, through coincidence in parents, to serious deformities in the offspring. For proper diagnosis it is well to keep in mind that a symmetrical anomaly suggests a hereditary and an asymmetrical an acquired defect. The harelip-cleft palate syndrome is a defect conditioned by heredity; it is twice as frequent among males as among females. That the condition has been transmitted as a simple dominant trait should be readily determined by examination of the patient's family. With regard to congenital dislocation of the hip, it is *Verschuer's opinion* that this is an inherited anomaly, although the problem is in need of further investigation. Geographic factors may participate in the etiology. In the discussion of his paper, the spokesmen of several clinics took exception to *Verschuer's* views relative to heritability of dislocation of the hip and the eugenic evaluation of harelip and cleft palate. The Leipzig clinic, for example, maintains that neither harelip nor cleft palate is to be considered a grave hereditary defect.

PANCREATIC NECROSIS

Professor Nordmann of Berlin spoke on necrosis of the pancreas. The former theory of pathogenesis, namely overflow into the excretory duct and resultant activation of the secretion, is no longer tenable. Functional disturbances are more important than mechanical disturbances. The principal etiologic factor is dyskinesia in the pancreas. The value of the diastase test is disputed. The author concedes its worth but recommends that only diurnal urine should be tested. The diastase values permit no conclusions with regard to prognosis. The determination of lipase is too circumstantial. Increase in the number of leukocytes is an important sign. If blood sugar values are high, prognosis is unfavorable. Initial shock is the most reliable diagnostic sign. If hematemesis occurs, the patient has little chance of surviving. Cure is possible without drainage of the abdominal cavity. Nordmann is accustomed to employ conservative treatment. After the illness has subsided, radical abolishment of the biliary disturbance is indicated. Late diabetes is observed only in hereditarily defective patients with damaged islands of Langerhans.

Professor von Bergmann of Berlin supplemented Nordmann's report and called attention to the need for stricter dietetic therapy. During an attack complete deprivation of food and water for from three to four days is imperative. Later a fat-free, pure carbohydrate diet may be instituted. Pancreatic necrosis is often accompanied, if not librated, by disease of the bile ducts. The author referred to the difference in pressure in the bile ducts and in the pancreas, which apparently makes possible an encroachment of the inflammation on the pancreas. Since the gallbladder functions as a pressure-release valve, it should be permitted to remain. In contrast to hereditary diabetes, acquired diabetes is a frequent sequel of pancreatic sclerosis and necrosis.

TRAFFIC ACCIDENTS

The second day's session was held jointly with the Society of Orthopedic Surgery and the Medical Society for Study of Accidental Injuries. Professor Kirschner of Heidelberg submitted a paper on "The Traffic Accident and Its Medical Aspects." Special types of lesions are sustained in these accidents, so special therapeutic measures are indicated. The injured persons should be sent not to any hospital but to an institution especially equipped to treat such patients. They should receive immediate attention. The largest proportion of the victims of traffic accidents die within the first twenty-four hours. At the Heidelberg clinic about 1,500 patients injured in traffic accidents have been received within the last three years. Serious accidents virtually always produce severe shock; the usual measures recommended to combat this condition are

protracted drip infusion treatment with a 5 per cent solution of dextrose and, better still, blood transfusion. Frequently a fat embolus, which may be found even in the absence of fracture, may develop during the shock. Emergency dressing of wounds may be decisive for the recovery of the injured persons. All wounds are treated surgically; only smooth cuts from automobile glass should be immediately sutured. All injured persons receive antitetanic serum and occasionally in addition polyvalent anaerobic antitoxin. Serum prophylaxis of subcutaneous emphysema is not altogether reliable. More than 90 per cent of the patients incur injuries to the head or to the extremities. The general mortality for patients injured in traffic accidents is 3.6 per cent. One half of this number succumb to head injuries within twenty-four hours. Injuries to the vertebral column are surprisingly rare. Hemothorax is a dangerous complication that should be treated conservatively. If the bleeding tends to increase, permanent drainage is preferred to puncture. If hemorrhage is arrested, a timely thoracotomy is indispensable. In cases of abdominal lesions, operation should not be performed while the patient is in shock but should be deferred from one to three hours. Important diagnostic signs are a rapid rise in the leukocyte count and pneumoperitoneum. Injuries to the kidney from blunt force should be treated as conservatively as possible. The urethra may be lacerated although the pelvis is not fractured. Traumas of the extremities were presented by 72 per cent of the Heidelberg patients.

SURGICAL TREATMENT OF TUBERCULOSIS

Sauerbruch of Berlin then spoke on "Surgical Therapy of Pulmonary Tuberculosis and Bronchiectasis." Congenital bronchiectasis may be present in otherwise healthy pulmonary lobes; it is usually restricted to one or two lobes. The intervention of choice is lobectomy, but the indications for a single stage or a two stage operation differ greatly in the individual case. For bilateral bronchiectasis lobectomy may be performed on both sides. Pulmonary tuberculosis may be treated surgically by paravertebral thoracoplasty, which Sauerbruch calls the procedure of choice. Curative results take place in about 40 per cent of the cases, with an operative mortality of from 6 to 8 per cent. Whereas formerly only old processes were submitted to surgical treatment, early operative intervention for fresh processes is now recommended. In the treatment of nonulcerative tuberculosis partial operations are performed instead of thoracoplasty. Sauerbruch is extremely cautious in his evaluation of extrapleural pneumothorax and oleothorax, neither of which can be generally recommended as yet, in view of the danger involved. Their further development is desirable; however, some medium more satisfactory than oil and air should be found. On the other hand, the worth of paraffin filling has been proved. The indication must, of course, be rational and the application skilful. The principal advantage of paraffin filling is the trivial character of the procedure and the slight systemic reaction. Fine results are obtained, above all with bilateral tuberculosis, by paraffin filling alone or in combination with other procedures such as contralateral pneumothorax and plastic operations. An important presupposition for the improvement of this method is the creation of a more suitable plugging material. A further advance consists in renunciation of the stereotyped application of phrenic avulsion. It is agreed that so-called apex plastics are indicated only for certain circumscribed conditions. Partial plastic interventions represent only so many steps in the direction of the older paravertebral rib resection. In the case of cavernous tuberculosis too early operation is again rejected, but it is customary to begin treatment earlier than in former times by collapsing the cavities. Partial resection is the surgical method of predilection in such cases. An extensive discussion of the foregoing topic followed.

POLAND

(From Our Regular Correspondent)

July 2, 1938.

Scarlet Fever with Jaundice

In the course of the last scarlet fever epidemic in Warsaw, many cases of jaundice were observed, which was unusual. At a meeting of the Association for Internal Medicine in Warsaw, Czuprynski, Jaroszewicz and Swiecicki reported four cases of jaundice in 120 cases of scarlet fever observed at the hospital for contagious diseases. The complication occurred at the end of the second week and lasted from three days to three weeks. In three of the four cases, the scarlet fever itself was mild. In all the cases of jaundice the skin was intensely yellow, the van den Berg reaction of the blood was strongly positive, the liver was enlarged, the spleen was not palpable and the resistance of the erythrocytes to hypotonic solutions was normal. The urobilinogen and bilirubin reactions of the urine were positive. On the basis of these symptoms the lecturers diagnosed parenchymatous hepatitis. It may be supposed that the last epidemic of scarlet fever had a characteristic tendency to affect the cells of the liver. It should be added that in all cases the jaundice appeared before the treatment with sulfanilamide preparations.

The Action of Digitalis Lanata on Cardiac Insufficiency

New researches have been made concerning the influence of digitalis lanata glucosides on heart failure, especially in comparison with that of digitalis purpurea and strophanthus preparations (strophanthin, ouabain). These researches were made in the ward for internal diseases in St. Lazarus hospital by Professor Semerau-Siémianowski and his collaborators Drs. Zera, Walawski and Rasolt. Seventy cardiac patients were studied, and experiments were made on eighteen dogs. The authors came to the conclusion that the best effects of digitalis lanata are obtainable in cases of cardiac insufficiency resulting from pure myocardial degeneration without valvular lesions. The diuretic action of digitalis lanata, they found, is weaker than that of digitalis purpurea.

Recent Graduates Must Practice in Small Cities

The Polish Diet has passed a law aiming at supplying medical aid to inhabitants of small towns and villages. As physicians are most numerous in cities, the law requires every newly qualified physician to practice in towns or villages of less than 5,000 inhabitants for two years, practice in cities being allowed only after that period. This law does not concern physicians who have practiced in cities until the end of 1938.

Quacks Forbidden to Lecture

The Polish government has forbidden any one without medical education to lecture on health or disease. This law aims to impede the development of quack medicine, which is widespread in Poland.

Marriages

OSCAR MANDEL PLOTKIN, Chicago, to Miss Evelyn Sylvia Horowitz of Pensacola, Fla., in Houston, Texas, February 6.

JULIAN PARKER HOWELL, Demopolis, Ala., to Miss Agna Jordan of Iron City, Tenn., at Birmingham, Ala., June 16.

YOUNG LAFAYETTE HALL JR., Miami, Fla., to Miss Margaret Griffin of Washington, D. C., at Valdosta, Ga., June 3.

BERT RAYMOND HOOBLER, Detroit, to Icie G. Macy, Ph.D., both of Detroit, in Grosse Pointe, Mich., recently.

JOSEPH CLAYTON WOOD, Nashville, Tenn., to Miss Sarah Helen Hamilton of Birmingham, Ala., June 25.

WILLIAM COOPER HUNTER to Miss Martha Elizabeth Cheatham, both of Wilson, N. C., June 25.

Deaths

Alexander Louis Prince ☉ Hartford, Conn.; Yale University School of Medicine, New Haven, 1910; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; served during the World War; formerly assistant professor of physiology at his alma mater; on the staffs of the Hartford Hospital, Manchester (Conn.) Memorial Hospital and the Windham Community Memorial Hospital, Willimantic; aged 53; died, May 25, of bilateral lobar pneumonia.

Edward Giles Blair, Kansas City, Mo.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889; member of the Missouri State Medical Association; fellow of the American College of Surgeons; attending surgeon to St. Joseph's Hospital, Kansas City, Mo., and Providence Hospital, Kansas City, Kan.; consulting surgeon to the Bethany Methodist Hospital, Kansas City, Kan., and on the visiting staff of the Research Hospital; aged 71; died, May 22, of heart disease.

David Henry Shelling, Brooklyn; Yale University School of Medicine, New Haven, Conn., 1925; member of the American Society for Clinical Investigation; at one time instructor in pediatrics at the Johns Hopkins University School of Medicine, Baltimore, and assistant physician to the Harriet Lane Home for Sick Children of the Johns Hopkins Hospital; author of "Parathyroid in Health and Disease"; aged 38; on the staff of the Jewish Hospital, where he died, May 17.

Charles Douglas Wheeler ☉ Worcester, Mass.; Harvard University Medical School, Boston, 1894; medical referee and formerly medical director of the State Mutual Life Assurance Company; fellow of the American College of Surgeons; at one time consulting surgeon to the Worcester City Hospital; aged 72; died, May 7, in the Memorial Hospital of fracture of the neck of the femur, diabetes mellitus, arteriosclerosis and bronchopneumonia.

Edwin J. Lent ☉ South Bend, Ind.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1892; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; served during the World War; on the staffs of the Epworth and St. Joseph's hospitals and the Children's Dispensary; aged 67; died, May 31, in a hospital at Picton, Ont., Canada.

Edwin Daniel Schnabel, Bethlehem, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1885; member of the Medical Society of the State of Pennsylvania; past president of the Northampton County Medical Society; at one time president of the board of health and board of school directors; on the staff of St. Luke's Hospital; aged 81; died, May 18, in Easton of coronary occlusion.

Raymond Victor Yokeley, Thomasville, N. C.; North Carolina Medical College, Charlotte, 1911; past president of the Davidson County Medical Society; formerly county coroner and county health officer; superintendent of the Mills Home Infirmary; aged 53; on the staff of the City Memorial Hospital, where he died, May 13, of abscess of the pancreas, fecal fistula and chronic intestinal obstruction.

John Aloysius McVean, Cleveland; Western Reserve University School of Medicine, Cleveland, 1917; member of the Ohio State Medical Association; at one time demonstrator of clinical pathology at his alma mater; visiting physician to St. John's Hospital; aged 59; died, May 26, at his home in Lakewood, Ohio, of carcinoma of the prostate with general metastases.

Harvey Doak Wood ☉ Fayetteville, Ark.; St. Louis Medical College, 1872; member of the House of Delegates of the American Medical Association in 1927; past president of the Arkansas Medical Society and the Washington County Medical Society; on the staff of the Fayetteville City Hospital; aged 91; died, May 13, of fracture of the femur and pulmonary tuberculosis.

Charles Henry Winn, Newton, Mass.; Harvard University Medical School, Boston, 1888; was appointed by President Cleveland to the United States Board of Examining Surgeons for Pensions; member of the Massachusetts Medical Society; for many years visiting surgeon to St. Elizabeth's Hospital, Boston; aged 74; died, May 10, of acute yellow atrophy of the liver.

Walter Stratton Britt ☉ Eufaula, Ala.; Bellevue Hospital Medical College, New York, 1898; past president of the Medical Association of the State of Alabama and the Barbour County

Medical Society; president of the city board of education; fellow of the American College of Surgeons; medical director of the Britt Infirmary; aged 61; died, May 27, of septicemia.

William Bartholomew Young, Cambridge, Mass.; Harvard University Medical School, Boston, 1918; member of the Massachusetts Medical Society; served during the World War; instructor in obstetrics at his alma mater; aged 48; on the staffs of the Cambridge Hospital and the Cambridge City Hospital, where he died, May 11, of valvular disease of the heart.

Adolph Bronson, Renton, Wash.; College of Physicians and Surgeons of San Francisco, 1904; for many years a member of the board of trustees of the King County Hospital, Seattle; owner and superintendent of the Renton Hospital; aged 61; died, May 26, in the Virginia Mason Hospital, Seattle, of heart disease and diabetes mellitus.

Francis Michael McMurray, Fitchburg, Mass.; University and Bellevue Hospital Medical College, New York, 1899; past president and secretary of the Worcester District Medical Society; on the staff of the Burbank Hospital; aged 65; died, May 8, of arteriosclerosis, cerebral hemorrhage, coronary thrombosis and bronchopneumonia.

James Clinton Wolfe, Montclair, N. J.; University of Maryland School of Medicine, Baltimore, 1921; police and fire surgeon and member of the board of health of Glen Ridge; member of the American Society of Anesthetists; on the staff of the Mountainside Hospital; aged 39; died, May 23, of coronary thrombosis.

Henry Joseph Way, Chicago; M.B., University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1892; M.D., Victoria University Medical Department, Coburg, Ont., 1892; served during the World War; on the staff of the Westside Hospital; aged 72; died, May 2, at his home in Oak Park, Ill.

James C. Reynolds, Frederick, Okla.; Memphis (Tenn.) Hospital Medical College, 1904; member of the Oklahoma State Medical Association; formerly secretary of the Tillman County Medical Society; on the staff of the Spurgeon, Arrington and Allen Hospital; aged 56; died, May 14, of brain tumor.

Charles Harvey Morrow, Gloucester, Mass.; University of Pennsylvania Department of Medicine, Philadelphia, 1885; member of the Massachusetts Medical Society; aged 77; died, May 2, in the Danvers (Mass.) Hospital of polycystic kidneys, myocarditis and acute hemorrhagic enteritis.

Chapman Edward Strong, Long Island City, N. Y.; New York Homeopathic Medical College and Hospital, 1892; member of the Medical Society of the State of New York; aged 75; died, May 17, in the Flower Hospital, New York, of perforated gastric ulcer and pulmonary edema.

Marshall Baber Saunders, Waco, Texas; Kentucky School of Medicine, Louisville, 1896; member of the State Medical Association of Texas; past president of the McLennan County Medical Society; aged 67; died, May 3, of myocarditis, nephritis and chronic hypertrophic prostatitis.

William Andrew Brumfield, Farmville, Va.; University of Virginia Department of Medicine, Charlottesville, 1897; health officer of several counties in the lower Piedmont region; formerly health officer at the Virginia Polytechnic Institute, Blacksburg; aged 63; died, May 29.

Alfred Magnus Kendahl, Jasper, Minn.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1909; member of the Minnesota State Medical Association; member of the schoolboard; aged 60; died, May 31, in Rochester of pneumonia.

Samuel J. Gittelsohn, Philadelphia; University of Louisville (Ky.) Medical Department, 1892; one of the founders of the Mount Sinai Hospital, on the staff for many years and for the last ten years consulting ophthalmologist; aged 71; died, June 26, of gastric malignancy.

Maitland Newman Stewart, Jackson, Mich.; Detroit College of Medicine, 1905; member of the Michigan State Medical Society; aged 55; on the staffs of the Mercy Hospital and the Foote Hospital, where he died, May 2, of a streptococcal infection of the left leg.

Charles William Schwartz, Huntingburg, Ind.; University of Louisville (Ky.) Medical Department, 1874; member of the Indiana State Medical Association; formerly a druggist; at one time mayor; aged 87; died, May 22, of cardiovascular disease and uremia.

John W. G. Stewart, Wabash, Ind.; Hahnemann Medical College and Hospital, Chicago, 1889; member of the Indiana State Medical Association; aged 76; died, May 17, in the Wabash County Hospital of Parkinson's disease and an injury received in a fall.

Radford Palmblad Potter, Toledo, Ohio; Ohio State University College of Medicine, Columbus, 1925; member of the Ohio State Medical Association; aged 43; on the staff of the Toledo State Hospital, where he died, May 11, of hypernephroma.

Francis Winthrop Pyle, Bridgeport, Conn.; Columbia University College of Physicians and Surgeons, New York, 1902; aged 64; on the staff of the Bridgeport Hospital, where he died, May 20, of cirrhosis of the liver, cholelithiasis and cystitis.

William Garfield Moore, Camden, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1907; formerly county coroner; aged 54; died, April 30, in the Jefferson Hospital, Philadelphia.

Milton Paul Wallenstein, Cleveland; Western Reserve University School of Medicine, Cleveland, 1934; resident to the Cleveland State Hospital; aged 28; died, May 13, in the City Hospital of typhoid fever.

Walter Fraser, Algona, Iowa; Marion-Sims College of Medicine, St. Louis, 1893; member of the Iowa State Medical Society; served during the World War; aged 68; died, May 19, of cerebral hemorrhage.

Samuel Gilbert Jump, Muncie, Ind.; Medical College of Indiana, Indianapolis, 1900; county health officer; served during the World War; aged 66; died, May 11, in Lafayette, of acute dilatation of the heart.

John Franklin Martinson, Port Huron, Mich.; Detroit Homeopathic College, 1905; member of the Michigan State Medical Society; aged 61; died, May 1, of cerebral hemorrhage and chronic nephritis.

William Alexander Sinclair, Somerville, Mass.; College of Physicians and Surgeons, Boston, 1905; aged 65; died, May 26, of an operation for chronic hypertrophy of the prostate and pulmonary embolism.

J. Harvey Staatz, Bushton, Kan.; Northwestern University Medical School, Chicago, 1900; past president of the Rice County Medical Society; aged 63; died, May 2, in an automobile accident.

George N. Thomas, Presidio, Texas; College of Physicians and Surgeons, Baltimore, 1905; served during the World War; formerly connected with the U. S. Public Health Service; aged 60; died, April 15.

James Joseph Murphy, Paris, Ill.; University of Illinois College of Medicine, Chicago, 1936; secretary of the Edgar County Medical Society; aged 26; was drowned, May 5, when his boat capsized.

St. Julian Oppenheimer, Richmond, Va.; Medical College of Virginia, Richmond, 1893; member of the Medical Society of Virginia; formerly surgeon for the city police department; aged 72; died, May 1.

John Solomon Taupier, Chambly Bassin, Que., Canada; Victoria University Medical Department, Coburg, Ont., 1876; at one time mayor; aged 85; was killed, April 23, in an automobile accident.

Alfred Goss, Adams, N. Y.; University of Vermont College of Medicine, Burlington, 1883; member of the Medical Society of the State of New York; aged 77; died, April 1, of heart disease.

George Waldron Worcester, Newburyport, Mass.; Hahnemann Medical College and Hospital, Chicago, 1883; on the staff of the Newburyport Homeopathic Hospital; aged 77; died, April 9.

Alonzo Augustus Bilisoly, Portsmouth, Va.; University of Maryland School of Medicine, Baltimore, 1893; for many years on the staff of the Parrish Memorial Hospital; aged 66; died, May 5.

Edwin George Warne, St. Paul; Medical Department of Hamline University, Minneapolis, 1897; aged 67; died, April 3, in St. Luke's Hospital of carcinoma of the prostate and lobar pneumonia.

Will Cantwell McIrvin, Atwood, Kan.; College of Physicians and Surgeons, Keokuk, Iowa, 1879; Barnes Medical College, St. Louis, 1893; aged 78; died, May 9, of monoxide gas poisoning.

Gualtiero De Ameza, Boston (licensed in Massachusetts in 1894); served during the World War; aged 72; died, May 27, in the Charlesgate Hospital, Cambridge, Mass., of diabetes mellitus.

Edward Walsh Lyons, Chicago; Northwestern University Medical School, Chicago, 1909; served during the World War; aged 52; died, May 19, of pulmonary tuberculosis and diabetes mellitus.

J. Wilson Mitchell ☉ Seattle; Saginaw (Mich.) Valley Medical College, 1899; aged 64; on the staff of the Providence Hospital, where he died, April 7, of diffuse hepatitis and jaundice.

William Dinwoodie, Minneapolis; Jefferson Medical College of Philadelphia, 1877; aged 84; died, May 12, in the Minnesota Masonic Home, Bloomington township, of carcinoma of the thyroid.

Joseph Dries, Milwaukee; Milwaukee Medical College, 1897; member of the State Medical Society of Wisconsin; aged 73; died, May 3, of coronary thrombosis and paralysis agitans.

James C. Boice, Washington, Iowa; College of Physicians and Surgeons, Keokuk, 1876; member of the Iowa State Medical Society; Civil War veteran; aged 91; died, May 17, of general debility.

Samuel Thomas Anderson Kent, Ingram, Va.; College of Physicians and Surgeons, Baltimore, 1882; member of the Medical Society of Virginia; aged 79; died, May 23, of senility.

John Whittinton Gilbert ☉ Lawrenceburg, Ky.; University of Louisville Medical Department, 1904; was chairman of the county health board; aged 57; died, May 3, of cerebral hemorrhage.

Charles Albert Farrell, Waterbury, Conn.; College of Physicians and Surgeons, Baltimore, 1914; served during the World War; aged 44; died suddenly, May 15, of myocarditis.

William W. Keirstead, Grand Rapids, Mich.; Detroit College of Medicine, 1889; aged 79; died, May 20, in St. Mary's Hospital of paraldehyde poisoning and chronic myocarditis.

Daniel C. O'Connell, Milwaukee; Wisconsin College of Physicians and Surgeons, Milwaukee, 1904; aged 72; died, April 19, in St. Joseph's Hospital of carcinoma of the stomach.

James Patton Boyd, Laguna Beach, Calif.; University of the City of New York Medical Department, 1879; aged 84; died, April 2, of cerebral hemorrhage and arteriosclerosis.

John Blair Robinson, Mount Vernon, Iowa; Hahnemann Medical College and Hospital, Chicago, 1879; member of the Iowa State Medical Society; aged 85; died, April 21.

Caroline Mims, New Orleans; Woman's Medical College of Pennsylvania, Philadelphia, 1912; member of the Louisiana State Medical Society; aged 64; died, May 8, of carcinoma.

Joel Lang Winslow, Pittsburgh; Jefferson Medical College ☉ Philadelphia, 1891; aged 68; died, April 7, in the Homoeopathic Hospital of adenoma of the prostate.

Lemuel F. Loggins ☉ Charlotte, Tenn.; University of Nashville (Tenn.) Medical Department, 1909; aged 54; died, May 6, in a hospital at Nashville of septicemia.

Uldrick McLaws Kieffer, Atlanta, Ga.; Jefferson Medical College of Philadelphia, 1914; served during the World War; aged 48; died, May 24, of coronary thrombosis.

Ernest Chestine Melton, Baltimore; Howard University College of Medicine, Washington, D. C., 1926; aged 43; died, May 11, of chronic myocarditis and nephritis.

Walter N. Moore ☉ West Branch, Iowa; State University of Iowa College of Medicine, Iowa City, 1906; aged 61; died, May 22, of carcinoma of the liver.

Wilfrid C. Pepin, Windsor, Ont., Canada; Detroit College of Medicine, 1906; on the staff of the Salvation Army Grace Hospital; aged 54; died, May 22.

James R. Crawford, Los Angeles; University of Pennsylvania Department of Medicine, Philadelphia, 1886; aged 78; died, April 23, of arteriosclerosis.

Samuel Radway, Chicago; Chicago Medical School, 1922; aged 45; died, May 27, of coronary thrombosis, chronic myocarditis and diabetes mellitus.

William Andrew Lavery ☉ Loyalton, Calif.; California Medical College, San Francisco, 1899; aged 64; died, April 15, at Belmont.

G. E. Lewellyn, Wayland, Mo.; Missouri Medical College, St. Louis, 1885; aged 79; died, May 22, in Fulton of senility.

John M. Mahan, Bearden, Ark.; Jefferson Medical College of Philadelphia, 1877; aged 85; died, May 14, of colitis.

Dwight Monroe, Cameron, Texas; Louisville (Ky.) Medical College, 1876; aged 89; died, May 23, of heart disease.

J. C. Trentham, Cedartown, Ga.; Southern Medical College, Atlanta, 1881; aged 80; died, May 3, of myocarditis.

Cassius Minser, Webster, Ohio (licensed in Ohio in 1896); aged 80; died, April 23, of cerebral thrombosis.

Correspondence

"THE THERAPY OF GOITER AND OF HYPERTHYROIDISM"

To the Editor:—In the interests of accuracy I am moved to take exception to the following statements, implications and omissions noted in the article on "The Therapy of Goiter and of Hyperthyroidism" by Drs. Bernard Fantus and Lindon Seed (*THE JOURNAL*, June 4):

1. In discussing the therapy of nontoxic diffuse goiter, the iodine content of iodized salt is mentioned as 1 mg. of iodide per kilogram of salt. This appears to be an error (perhaps a typographic one) as this concentration equals one part per million, whereas the usual concentration recommended in endemic goiter areas is one or two parts of iodide per hundred thousand.

2. In discussing the treatment of toxic nodular goiter it is stated unequivocally that iodide is contraindicated. This is a point concerning which there is a considerable difference of opinion. There are undoubtedly many cases of toxic nodular goiter which respond to iodine in a manner identical with cases of toxic diffuse goiter and in many clinics, including our own, iodine is administered as a routine preoperative measure to patients with toxic nodular goiters.

3. In the discussion of the cardinal symptoms of toxic diffuse goiter it is stated that the food intake is invariably increased. I am sure that this is not correct. A considerable number of patients with hyperthyroidism show marked impairment of appetite and marked decrease in food intake. As a matter of fact, one of the advantages which have been attributed to vitamin B therapy in hyperthyroidism is its stimulating effect on appetite (Means, J. H.; Hertz, Saul, and Lerman, Jacob: *Ann. Int. Med.* 11:429 [Sept.] 1937).

4. It is further stated that an increased basal metabolic rate is constant in hyperthyroidism. The exact sense of this statement is not quite clear but if the authors mean that the basal metabolic rate is invariably and constantly increased above the so-called normal zone in hyperthyroidism they are in error. Attention has recently been called in the literature to cases of hyperthyroidism with so-called normal basal metabolic rate and it has been postulated that such individuals may have had a subnormal basal metabolism before the development of their disease and that the finding of a rate within the normal zone may actually represent a rise for those particular individuals.

5. The statement that blood iodine is elevated in all cases of hyperthyroidism is open to serious doubt, as a glance at the work of Dr. George Curtis and his associates will show.

6. In discussing the treatment of toxic diffuse goiter, it is stated that roentgen therapy should be reserved for cases unsuitable for surgical treatment or those in which operation is refused. While it is true that there is a wide divergence of opinion concerning the place of radiation therapy in hyperthyroidism, such a statement nevertheless seems somewhat less than fair to a mode of treatment which, properly used in properly selected cases, offers a very valuable therapeutic weapon in the milder group of thyrotoxicoses and in most children with toxic diffuse goiter.

7. In discussing the determination of operability in toxic diffuse goiter, it is stated that decompensation as evidenced by edema of the legs or ascites must be remedied before operation. This advice, if followed literally, will lead to difficulties in a certain number of cases. Some patients with thyrotoxic heart failure will not regain compensation no matter how long they are treated medically until the prime agent of the decompensation—the goiter—is removed surgically. The important point in handling such patients is to recognize when they have reached their maximal degree of improvement under medical

treatment and then, provided the risk is reasonable, to proceed with operation. If one waits for congestive phenomena to appear in such patients one would wait indefinitely in many instances.

8. In discussing preoperative preparation of patients with toxic diffuse goiter, it might have been helpful to include some reference to the use of vitamin B, which is believed by some writers to be of help in improving appetite and nutrition, perhaps in those patients who present evidence somewhat suggestive of a vitamin B deficiency.

9. In discussing the treatment of postoperative tetany, no mention is made of vitamin D, low phosphorus diet or dihydrotachysterol as methods of treatment in subacute or chronic cases. There is ample evidence in both the German and the American literature concerning the efficacy of dihydrotachysterol, or "A. T. 10," in the treatment of parathyroid tetany.

EDWARD ROSE, M.D., Philadelphia.

To the Editor:—In the article on "The Therapy of Goiter and of Hyperthyroidism" the paragraph which deals with the roentgen irradiation treatment of hyperthyroidism mentions one vague type of treatment. Now, just as the surgical technic of thyroidectomy varies from one surgical clinic to another, as regards the type of incision, the amount of gland removed and the type of anesthesia, so does the radiation treatment of hyperthyroidism vary from one clinic to another. It might be fairest to say that roentgen treatment of hyperthyroidism requires that an adequate dose be delivered to the entire thyroid gland during a period of from four to eight weeks. The total dose applied varies from 1,200 to 2,400 roentgens, measured in air, given to one or more fields. It is important not to check the result of such treatment by basal metabolic tests until at least six weeks has elapsed from the time of giving the last treatment (except, of course, under unusual circumstances, when urgent surgery or some other variation in postradiation care is indicated). The reason for postponing basal metabolic tests is that it normally takes a considerable number of weeks for the overacting thyroid gland to subside following adequate irradiation. Tests made during this "convalescent" period are apt to be misleading and disturbing both to the patient and to the unexperienced medical observer.

L. H. GARLAND, M.D., San Francisco.

To the Editor:—The points that Dr. Rose has discussed are well taken.

1. The standard quantity of iodine in iodized salt in this country is 0.023 per cent, or 1 part in 5,000.

2. Our unequivocal statement that iodine is contraindicated in toxic nodular goiter is incorrect. Toxic nodular goiters can be operated on without the use of iodine with the same mortality as with the use of iodine. There is no doubt that some of the patients improve when given iodine preoperatively. It is unwise ever to operate on a toxic goiter at any time without preliminary iodination.

3. The increase in food intake is not invariable. This is particularly true in elderly patients. In fact, a large number of persons over 55 will have a loss of appetite.

4. The statement was made that an increased metabolic rate is constant in hyperthyroidism. In spite of the literature to the contrary, this statement is probably correct. At least one can say that, if a patient has a normal basal metabolic rate, a thyroidectomy will do him little good. There is a tendency to operate on a large series of nervous women who have symptoms suggestive of a thyrotoxicosis but have a normal basal metabolic rate. If these cases are followed up, the results are usually found to be unsatisfactory. In a conversation with the late Dr. H. S. Plummer, he was asked if he ever saw a case of thyrotoxicosis in which there was a normal basal metabolic rate. He admitted that he had probably seen one or two and no more.

5. That the content of iodine in the blood is always elevated in hyperthyroidism is not an established fact.

6. Surgery is still the most widely accepted method of curing thyrotoxicosis. Radiation therapy will certainly cure a certain percentage, but not nearly as rapidly or as efficiently as a thyroidectomy. In the group of milder cases there is no reason why roentgen or radium therapy should not be tried. In charity practice the result is not worth the effort. In private practice the increased period of disability makes it economically impossible for those who have not sufficient finances to carry them over.

7. The statement was made that no patient should be operated on who has edema of the legs or ascites. One can operate in the presence of edema but the mortality is exceedingly high. The mortality will be less if one procrastinates. It is not asking too much that the preoperative treatment rid the patient of the edematous fluid. The exceptions to this rule are so very rare that it probably should not be altered.

8. There may be patients who have a vitamin B deficiency. So far in our experience we have never seen one that we recognized.

9. No mention was made of vitamin D or low phosphorus diet in the treatment of postoperative tetany. This was a deliberate omission. One of us presented the first clearcut evidence that large doses of vitamin D would relieve an uncontrollable tetany (Reed, C. I., and Seed, Lindon: *Treatment of Clinical Tetany with Irradiated Ergosterol*, *Endocrinology* 17:136 [March-April] 1933). There are very few cases of tetany that cannot be controlled with calcium and parathyroid extract. If the tetany is so severe that calcium will not control the symptoms, it will require very large doses of vitamin D. There are some harmful effects in these doses, especially if they are continued over a long period. We have a number of patients under such treatment and until a sufficient number of years has passed and autopsies have been obtained, we do not believe that vitamin D should be recommended as a routine treatment.

Many of the statements which were made in the article are rather dogmatic. It is necessary, however, at times to make dogmatic statements in order to emphasize the points.

LINDON SEED, M.D., Chicago.

THE ADRENALS IN HYPERTENSION

To the Editor:—In THE JOURNAL June 25 is an article by Rogoff and Marcus on "The Supposed Role of the Adrenals in Hypertension." The article is based on a suggestion, resuscitated from a paper by Cannon and de la Paz, published twenty-seven years ago (*Am. J. Physiol.* 27:64, 1911), that hypertension might be dependent on adrenal secretion and that adrenal secretion might be continuously stimulated by circulating epinephrine. This idea of self stimulation of adrenal secretion was based on a statement by T. R. Elliott (*J. Physiol.* 32:401, 1905) that injected epinephrine excites adrenal secretion.

The authors of the article on adrenals in hypertension make no reference to the argument and to the evidence that I presented sixteen years ago against the idea that adrenal secretion plays a role in the maintenance of blood pressure (see *Endocrinology and Metabolism*, New York, 2:183, 1922). They pay no attention to testimony that blood pressure continues to be normal when the adrenals have been deprived of connections with the central nervous system, i. e., when they are functionless—indeed, that it continues normal after the entire sympathetic system has been removed (Cannon, Bradford: *Am. J. Physiol.* 97:592 [July] 1931). They do not refer to published evidence that in quiet existence there is no demonstrable secretion from the adrenal medulla (Cannon, W. B., *ibid.* 98:447 [Oct.] 1931). Furthermore, there is no indication that the authors are acquainted with the wealth of recent studies showing that nerve

impulses of the autonomic system are mediated by chemical agents. If they had known of these studies they would have understood that the nerves supplied to the adrenal medulla are cholinergic and not adrenergic, i. e. that their impulses are mediated by acetylcholine and not by an epinephrine-like substance (Feldberg and Minz: *Arch. f. exper. Path. u. Pharmacol.* 163:66, 1931; *Arch. f. d. ges. Physiol.* 233:657, 1933). Had they learned of this evidence they would have been saved the time and expense devoted to the research which they published. There was, indeed, not the slightest reason for them to labor to contradict an ancient idea of "autogenous continuance" of adrenal secretion.

The emergency theory of the sympatho-adrenal system is not based, as the authors state, on "premises." It is based on observations that this system is brought into special action in critical circumstances such as exposure to cold, hypoglycemia, hemorrhage, low oxygen tension, vigorous struggle and emotional excitement. These observations have been confirmed by various observers, in different countries, using various methods. The critics of these methods have had more than twenty years to obtain support for their point of view and thus far have not found it.

WALTER B. CANNON, M.D.,
Harvard Medical School,
Boston.

METHOD FOR CLEANSING URINAL TUBES

To the Editor:—Not only do patients at home find difficulty in cleaning urinal tubes in cases of suprapubic fistulas of the inrustations caused by phosphates, but I have noticed also in hospitals the same lack of proper procedure. The urinals never get properly clear. The tubes used for the drainage of the urine are boiled sometimes but the whitish deposits remain. I saw Pezzar catheters ready to be inserted with the grayish stonelike crystals in their heads. The deposits are not easy to remove mechanically; rubbing and scratching has some effect but take time and do not give satisfactory results. There is a simple means to get excellent results: Catheters are put into a 5 per cent solution of muriatic acid; urinals, india rubber tubes, connecting glass tubes are treated with an 8 to 10 per cent solution and in a short time they are cleaned and clear. If one is in a hurry for the catheter or suprapubic tubes the stronger solution may be used. It goes without saying that good rinsing must take place after the application of the acid.

OTTO NEUSTÄTTER, M.D., Baltimore.

TOXIC FACTOR IN BROMO-SELTZER

To the Editor:—In a communication to THE JOURNAL July 2, Dr. J. L. Henderson criticizes the article by Dr. D. M. Olkon on "Chronic Subdural Hematoma with Acute Psychotic Manifestations" (THE JOURNAL, May 14, p. 1664). Dr. Henderson believes that some of the symptoms in Dr. Olkon's patient may have been due to a bromide delirium resulting from excessive self medication with "Bromo-Seltzer."

Dr. Henderson falls into a common error in assuming that "Bromo-Seltzer" contains enough bromide to produce intoxication. The toxic factor in "Bromo-Seltzer" is not bromide but acetanilid (McElroy, W. S.: Methemoglobinemia Due to Bromo-Seltzer Poisoning, THE JOURNAL, Dec. 27, 1919, p. 1927). Acetanilid taken in large doses over a long period may produce psychotic manifestations and this and the possibility of blood changes are the main dangers of self medication with "Bromo-Seltzer." Because of the widespread use of "Bromo-Seltzer" the possibility of acetanilid poisoning should always be investigated when one is confronted by a toxic psychosis.

Dr. Henderson may be justified, therefore, in insisting that the "Bromo-Seltzer" factor be evaluated in Dr. Olkon's case, but not for the reason given, that is, bromide intoxication.

FREDERICK LEMERE, M.D., Seattle.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

URTICARIA FROM INSECT BITES

To the Editor:—An intelligent young married woman near Saratoga, N. Y., states that four weeks ago she was bitten on the neck and arms by insects. She believes that these insects were deer flies. Since that time she has had constantly recurring urticarial lesions over the entire body. The original lesions are still present and are tiny nodules with clear centers like vesicles which do not collapse or exude fluid on being pricked with a needle. She has received no relief from calcium by mouth or injection or from epinephrine, ephedrine or other remedies. When she remains under bedclothes or is covered by clothing the itching is somewhat relieved. The hives come and go constantly as one observes them. About four years ago she had a similar attack lasting for six weeks in spite of all medication. Tests for sensitivity to foods and other substances were negative. Minor attacks of urticaria followed bee stings during this time. She is quite miserable and I would appreciate a reply as soon as possible.

MAX RICHTER, M.D., New York.

ANSWER.—Insect bites have been known to cause rather prolonged urticaria and even fatalities in susceptible persons. Tuft (Clinical Allergy, Philadelphia, W. B. Saunders Company, 1937, p. 474) states that actual hypersensitiveness probably exists in such patients, although the toxic action of the venom must also be considered. Numerous instances have been reported of severe reactions, often of a generalized urticarial or edematous type, resulting from the sting of a bee or wasp. Similar reactions, possibly less intense, have occurred after the bite of a mosquito, flea, bedbug and sandfly. Deer flies have not been blamed as yet. Hubert (*Lyon. méd.* 138:678, 1926) had a patient who was stung twice by a wasp and the second time had generalized urticaria with anaphylactic shock. Mantoux (*Presse méd.* 36:257 [Feb. 29] 1928) and Mühlipfordt (*Deutsche. med. Wchschr.* 55:106 [Jan. 18] 1930) report similar cases. Many other reports also are available. Benson and Semenov (*J. Allergy* 1:105 [Jan.] 1930) have demonstrated conclusively that allergy to bee stings is entirely comparable to allergy from other protein-containing substances.

Benson (*J. Allergy* 8:47 [Nov.] 1936) claims to have helped patients who are highly allergic to mosquito bites by injections of an extract of mosquitoes. By analogy, if an extract of deer flies could be obtained increasing injections might help the patient. From a nonspecific point of view, other methods of treatment may be tried. Among them may be mentioned auto-hemotherapy or injection of some nonspecific protein, e. g., boiled milk or typhoid vaccine; aminophyllin intravenously may help. Wolpe (*Wien. klin. Wchschr.* 50:1243 [Sept. 3] 1937; abstr. THE JOURNAL, Oct. 23, 1937, p. 1409) gave injections of an extract of bee venom to a patient who had severe generalized urticaria after a bee sting; for five years thereafter no further urticaria occurred. An additional twenty-five patients with urticaria were treated with injections of bee venom extract and fifteen were completely relieved and six others improved. Six cases of angioneurotic edema were completely cleared up by this treatment.

ANEMIA, UREMIA AND DYSPNEA

To the Editor:—1. Are anemia and hypertension considered a necessary part of uremia? 2. What is the general range of the anemia in uremia? 3. What is the generally accepted theory for the pathogenesis of anemia and of dyspnea in uremia?

DAVID NAGOURNEY, M.D., Staten Island, N. Y.

ANSWER.—1. (a) With the exception of the acute uremia occurring in fulminating acute nephritis, in some cases of malignant hypertension or in sudden obstruction of the urinary tract, or following the removal of the patient's only kidney, uremia is characteristically associated with anemia. One must, however, allow for concentration of the blood in dehydrated individuals. In general it is a good rule always to consider the possibility of renal insufficiency in children or adults with unexplained anemia.

(b) Hypertension is not a necessary part of uremia if the latter term is limited to the symptoms of uncomplicated renal insufficiency as seen in nephrectomized animals or in children with amyloid kidneys. However, the syndrome of hypertensive encephalopathy or "pseudo-uremia"—occipital headaches, vomiting, dizziness, blurred vision, convulsions and coma—is often

mistaken for uremia. The confusion is aggravated by the frequent combination of true uremia and "pseudo-uremia" in chronic hypertensive glomerulonephritis, malignant hypertension, chronic pyelonephritis and other hypertensive conditions. Why hypertension is associated with the uremic stage of certain types of kidney disease but is absent in other forms is unknown at present.

2. The general range of the anemia in uremia is usually from 50 to 70 per cent hemoglobin. However, such common factors as undernutrition, hemorrhage from mucous membranes, hemolysis due to intercurrent infections, and the duration of the underlying renal disease may reduce the hemoglobin and erythrocyte level to extremely low values. Severe dehydration may temporarily produce hemoconcentration.

3. (a) Aside from the known effects of dietary deficiencies, hemorrhage and infection on the hemopoietic system, the pathogenesis of the anemia in severe renal insufficiency is still unexplained. It is generally believed that the bone marrow is depressed by the toxic effects of retained metabolites. The anemia belongs in the aplastic normocytic group, incapable of response to liver extract and iron. However, there is no histologic evidence of a hypoplastic or aplastic bone marrow in chronic glomerulonephritis (Townsend, S. R.; Massie, Edward, and Lyons, R. H.: Studies on the Anemia of Chronic Glomerulonephritis and Its Relationship to Gastric Acidity, *Am. J. M. Sc.* 194:636 [Nov.] 1937). It is significant that the erythrocytes of nephritic patients are more resistant than normal erythrocytes to saponin hemolysis. This property has been ascribed to the inhibiting effect of uremic concentrations of urea, indican and phenol in the blood (Townsend, S. R., and Pijoan, M.: Action of Urea, Indican and Phenol on Red Cell Hemolysis, *Proc. Soc. Exper. Biol. & Med.* 37:236 [Oct.] 1937).

(b) The following factors, singly or severally, are usually responsible for dyspnea in uremia: (1) hypertensive left ventricular failure and the resulting pulmonary congestion or edema; (2) acidosis due to acute or chronic retention of inorganic phosphates and sulfates, to a lesser extent of organic acids, or to loss of fixed base in the urine or vomitus; (3) mechanical embarrassment of respiration by pleural, peritoneal or pericardial effusion, or by edema of the larynx or glottis; (4) cerebral vascular disturbances due to arteriosclerosis, hypertension or toxic metabolites, often productive of Cheyne-Stokes dyspnea; (5) terminal pneumonia or sepsis.

COCCIDIOIDAL GRANULOMA

To the Editor:—Kindly let me know the best treatment for coccidioides. What is the nearest approach to a specific?

CARL TILLMANN, M.D., Los Angeles.

ANSWER.—Coccidioidal granuloma is a much more severe disease than its relative blastomycosis, with a greater tendency to involve lymph nodes, bones and internal organs. A valuable review of the therapy is given by Sox and Dickson (Experimental Therapy in Coccidioidal Granuloma, *THE JOURNAL*, March 7, 1936, p. 777) from 1894, when Rixford reported on the use of potassium arsenite and yellow mercuric oxide internally and iodine, bromine, phenol, methyl violet, turpentine and mercury bichloride as local applications. Montgomery and Ormsby in 1908 emphasized general supportive treatment. Brown in 1907 and Brown and Cummins in 1915 favored iodides internally. Cook in 1915 combined arsphenamine with iodides. Childrey and Gray in 1932 used antimony and potassium tartrate with iodides without success. Chipman and Templeton had the same lack of success with this combination and also with colloidal copper, typhoid vaccine and gentian violet.

More encouraging results were those of Guy and Jacob in 1927, who reported clinical cure with antimony and potassium tartrate and unfiltered roentgen rays. They gave from 3 to 7 cc. of 1 per cent solution of antimony and potassium tartrate intravenously every other day and a half erythema unit of unfiltered roentgen rays every ten days. The lesions healed in four months but recurred a month later to yield promptly to the same treatment. One lesion that received no roentgen rays did not heal so promptly. This patient had been given roentgen rays and iodides previously without benefit. Tomlinson and Baneroff (Granuloma Coccidioides, *THE JOURNAL*, Jan. 6, 1934, p. 36) reported success in two cases with the combination of antimony and potassium tartrate and roentgen rays.

Zeisler's case was one with a variety of peculiar skin manifestations. After three months' treatment with colloidal copper alternating with antimony and potassium tartrate the lesions healed and remained well for three months but then recurred and were resistant to the same treatment. Zeisler mentions that the French colloidal copper was effective while that made by a local firm was not. The rule of prognosis in this disease

seems to be that cases in which the lesions are entirely cutaneous are much more readily controlled, but the fact is that resistance of the patient varies widely and cases in which cutaneous eruptions predominate often refuse to heal while those with deeper lesions sometimes clear up with comparative ease.

Jacobson (Coccidioidal Granuloma, *Arch. Dermat. & Syph.* 21:790 [May] 1930) points out that spontaneous remissions occur in the course of the disease and must be thought of in evaluating any method of treatment. He uses colloidal copper intramuscularly every four to seven days, depending on the systemic reaction to the injections, and coccidioidin subcutaneously every eighth to fourteenth day, depending on the local and general reaction. He also applies solid carbon dioxide, without pressure, through a heavy layer of petrolatum, to the skin lesions, allowing it to remain for from five to eight hours. His general management is the same as for generalized tuberculosis. He also uses roentgen rays. His results have been encouraging. Of fifteen patients treated during three and one-half years, four had died, two were still in the hospital improving under treatment, five were working and four had disappeared. Recently at a meeting of the Los Angeles Dermatological Society he demonstrated three cases, in two of which the lesions had cleared up in remarkably short time on treatment with a new vaccine (*Arch. Dermat. & Syph.* 37:345 [Feb.] 1938).

Based on the experiments of Myers, who found that thymol, its isomer carvacrol and the oils of cinnamon and cloves were active in killing yeasts, and the work of Stockton, who demonstrated that thymol inhibits the growth of *Coccidioides immitis* on culture mediums Sox and Dickson tried various drugs, colloidal copper, antimony and potassium tartrate intraperitoneally, vaccine subcutaneously and thymol by gavage in a series of guinea pigs inoculated in the testicle with a virulent culture of *Coccidioides immitis*. Of these drugs, thymol was the only one that prolonged the life of the animal beyond that of the controls (less than fifteen days). The animals treated with thymol remained in apparent health; when they were killed on the sixty-fifth day the infected area in the testicle was found walled off. The authors then used thymol diluted with an equal quantity of olive oil in doses of from 1 to 6 Gm. of thymol daily by mouth and also irrigated the coccidioidal abscess with 33½ per cent thymol in olive oil. After this treatment was begun, no further organisms were found in the pus and the patient's general condition improved. Lack of funds cut short the treatment and the patient disappeared. This promising line of attack should be investigated further.

Decision as to the best treatment for this serious disease is difficult because of the fact that spontaneous remissions occur and because of the wide variation in response to treatment in different cases. Lesions on the face are supposed to indicate a bad prognosis; but the case of an old seaman is reported, who, after the deeper foci had apparently cleared under treatment, continued to have elevated lesions on his forehead from which the organism could be readily obtained. This occurred as he went about his work apparently in good health. The results of Jacobson are excellent and it seems wise to follow his plan or that of Guy and Jacob, used also by Tomlinson and Baneroff. Whatever method is used, a good result in the acute fulminating types cannot be expected. If healing is obtained the treatment should be continued as long as possible, for recurrence is possible after many years.

PHENYLPIYRUVIC ACID IN URINE

To the Editor:—Can you give me any information on the significance of phenylpyruvic acid in the urine? Please indicate how to test for this substance.

WILLIAM COLE, M.D., Long Beach, Calif.

ANSWER.—The presence of phenylpyruvic acid in the urine of ten mentally defective patients was first described by H. S. Fölling (*Ztschr. f. physiol. Chem.* 227:169, 1929). The ketone acid does not occur in normal urine and in only a small percentage of the urines from mentally abnormal patients. Work of Penrose and Quastel (*Biochem. J.* 31:266 [Feb.] 1937) has indicated that the phenylpyruvic acid is excreted as a consequence of faulty metabolism of phenylalanine. Additional clinical reports have been made by Penrose (*Lancet* 1:23 [Jan. 5] 1935; 2:192 [July 27] 1935) and by Jervis (*Arch. Neurol. & Psychiat.* 38:944 [Nov.] 1937). The phenomenon is of considerable interest, as the available data suggest a clearcut association of mental disturbances with metabolic abnormality. Further research is needed to decide whether the two phenomena have a causal relationship or a common origin.

The presence of phenylpyruvic acid in the urine can be demonstrated only with uncontaminated and acid samples, the urine for such tests having been kept in a refrigerator with the addi-

tion of a few crystals of thymol. Qualitatively, the presence of phenylpyruvic acid can be demonstrated by the formation of a green coloration with ferric chloride. It is preferable, however, to isolate the ketone acid as the 2-4-dinitro-phenylhydrazone by treating the urine with a saturated solution of 2-4-dinitro-phenylhydrazine in normal hydrochloric acid. This reaction can be made quantitative by dissolving the yellow crystalline hydrazone in standard alkali and comparing the color of this solution with that of appropriate standards. Additional details may be found in the paper by Penrose and Quastel previously cited.

VAGINAL CONTRACTION—IRRITABLE URETHRA

To the Editor:—1. A white woman, aged 43, complains of having had a contraction of the vaginal orifice for five or six years, to the extent that her husband has not been able to have intercourse with her for all this time. On examination, the parts appear sclerotic, similar to those of a woman of 75. She cannot stand the introduction of more than one finger, and that is quite painful. The vagina proper does not seem to be contracted much, if at all; it is all more or less sensitive. The uterus is about normal in size and position, the tubes are not felt and she does not have any discharge. Please advise as to treatment. What can be done to restore family relations? What is the probability of a return of the trouble? 2. Other female patients complain of frequent, painful urination, of tenesmus, and of all the symptoms that are usually associated with cystitis. On examination, the urine proves normal both chemically and microscopically but if I pass a sound I find the urethra small and quite painful. Under gradual dilation these patients usually get better but often will not get entirely well, or the trouble recurs. Can you give me the best line of treatment? M.D., Kentucky.

ANSWER.—1. It is not stated whether this 43 year old patient continues to menstruate. If she does, the most probable diagnosis is leukoplakia with kraurosis. Monilia infection without leukorrhea may create a similar picture. If there has been a premature menopause, shrinkage such as this is characteristic of senile vaginitis, often ascribable in part to lack of estrogen. Patients with these various lesions should have a determination of the basal metabolic rate. Thyroid therapy is indicated if the rate is subnormal. Estrogen, hypodermically, orally or administered in vaginal suppositories, is helpful in patients with senile vaginitis and in others in whom there is a deficiency of this ovarian hormone. Surgical enlargement of the introitus is occasionally advisable, but it should usually be restricted to patients whose snugness is partly ascribable to a previous perineal repair.

2. Patients with symptoms of cystitis and a urine that is essentially normal usually suffer from an irritable urethra with urethral granulations. In all these cases it is necessary, of course, to rule out tuberculosis and to make certain that there is not a urethral stricture. The incidence of elusive ulcer of the bladder in cases such as this remains an open question. It is probably less common than has been assumed. Many cases of trigonal and urethral irritability may be assigned to apical infections of the teeth, much less often to other foci. In all instances of intractable vesico-urethral irritability, careful search should be made for infection of the roots of the teeth, and it is usually advisable to remove all dead teeth.

DIATHERMY IN ANGINA PECTORIS AND CORONARY THROMBOSIS

To the Editor:—Please tell me the value of the use of diathermy in acute coronary thrombosis and in coronary artery disease.

ROBERT M. TAYLOR, M.D., East Haven, Conn.

ANSWER:—It would seem from the reports in the literature that treatment of coronary artery disease by diathermy has not yielded sufficiently conclusive results to justify its continuance. Joslyn (*Arch. Phys. Therapy* 7:201 [April] 1926) reviewed a series of cases of what he considered good results in angina pectoris. He definitely advised against its use in coronary thrombosis however. Hyman (*ibid.* 14:270 [May] 1933) reported another series of cases, also advising against its use in acute or subacute coronary thrombosis and restricting its use to that of an adjunct only in cases of angina pectoris. H. D. Holman (*ibid.* 16:667 [Nov.] 1935) is even more conservative but considers that it may be a valuable adjunct when used with other remedial measures in angina pectoris, but not in coronary thrombosis.

Conservative management in coronary thrombosis results in a low mortality in the cases in which the immediate attack is survived. In angina pectoris so many different factors are involved that one would not expect consistently good results with one method of treatment, such as this, even if there were some reason for thinking it of value.

CRACKING NAILS FROM POLISHES

To the Editor:—Kindly inform me as to what ingredient is contained in nail polish that causes cracking of the nails. In what manner can this effect be overcome? Are there any nail polishes on the market that can be used to offset this reaction?

A. BENEDICT RIZZUTI, M.D., Corona, L. I., N. Y.

ANSWER.—The drying and cracking of nails caused by nail polishes is ascribed to the fat solvents that these preparations contain. Usually acetone alone or together with some other fat solvent is used. Also nail polish remover is largely acetone. Thus the repeated application and removal of these nail dressings brings the nail plate in repeated contact with strong fat solvents. Consequently the oils, cholesterol and lipoids normally present in the nails and that make them pliable are dissolved, leaving them dry and fragile. They then crack easily.

The following formulas may be found useful:

Nail Cream for Brittle Nails

	Gm. or Cc.
Triethanolamine	10
White petrolatum	15
White wax	5
Anhydrous wool fat.....	5
Water	75

Application should be made nightly and during the day too if possible. Rubber finger cots should be worn at night.

Nail Polish

	Gm. or Cc.
Benzoin	100
Alcohol	300
Amyl acetate	700
Pyroxylin	50
Eosin solution (1 per cent alcoholic).....	50

Dissolve benzoin in 200 cc. of alcohol, filter and add to solution of pyroxylin in the mixture of alcohol (100 cc.) and amyl acetate.

Nail Polish Remover

	Cc.
Acetone	50
Acetic ether	25
Alcohol	25

LACERATION OF INFANT'S PERINEUM FROM BREECH DELIVERY

To the Editor:—Dec. 13, 1937, I was called to deliver a primipara, aged 23. Vaginal examination revealed posterior breech presentation, with both legs high up over the head. The uterus was so tightly drawn round the presenting part that it was impossible to introduce even a little finger. The breech was well down in the pelvis. Fetal pulsations were becoming rapid and thready. Finding myself in a position in which haste was necessary, I managed to introduce my index finger in the vagina of the female infant and with traction from below and manipulation of the abdomen finally succeeded in delivery. Fifteen minutes of active resuscitation saved the baby. Of course the mother did not suffer ill consequences. The infant, however, had a complete laceration through the floor of the pelvis and into the rectum. The laceration was immediately repaired with black silk. Recovery was uninterrupted and by first intention. This is the first experience of this sort I have had. Do you know of a similar case?

H. A. ELKOURIE, M.D., Birmingham, Ala.

ANSWER.—Trauma to the soft parts in breech delivery has been described. An extensive laceration of the vagina, perineum and rectum by the introduction of a finger into the vagina and the exertion of traction has likewise been described. The more common occurrence is the result of the introduction of a finger into the baby's rectum.

Needless to say, these occurrences are always serious and can generally be avoided by the careful recognition of the fetal parts. One should make only moderate traction by the insertion of a finger in one or both groins if the breech is on the perineum. It is far better, however, to dislodge the breech and bring down a foot by means of Pinard's maneuver.

TOXICITY OF ACETONE AND ETHYLACETATE VAPOR

To the Editor:—One of our local factories is vaporizing a solution of equal parts of acetone and ethylacetate. What is your opinion as to the toxic effects of inhaling this vapor?

R. L. FEIGHTNER, M.D., Fort Madison, Iowa.

ANSWER.—No solvents are entirely innocuous in their vaporous state, but higher concentrations of acetone and ethyl acetate are required to bring about injurious effects than most other solvents. Flury and Zernik (*Schädliche Gase*, 1931, J. Springer, Berlin, p. 393) exposed animals to concentrations as high as 178 mg. of acetone per liter of air for one-half to one hour without fatalities. Henderson and Haggard noted that 20,000 parts of acetone per million of air were required to kill mice in an exposure of ten minutes. However, the latter stated: "The vapor of acetone is more toxic for brief exposure than is that of

chloroform and is only slightly less toxic than that of benzol." Hamilton notes: "Ethyl acetate causes in animals slight irritation of the eyes and air passages and strong vapors are slightly anesthetic. There is no record of intoxication in human beings from this compound." Concentrations of ethyl acetate below 500 parts per million may be regarded without serious apprehension.

SMALL GENITALIA IN INFANT—NOCTURNAL ENURESIS

To the Editor:—1. What treatment would you advise for a child 1 year of age whose penis has failed to develop since birth? The head of the penis is present, and both testicles are present but are rather small. The child is otherwise normal. 2. What treatment would you advise for a girl, aged 3, with nocturnal enuresis? J. F. CONNOR, M.D., Meadville, Pa.

ANSWER.—1. This anatomic part should be allowed to grow with the infant. No active therapeutic measure would seem indicated.

2. The following instructions might be given the mother of the child: Give plenty of liquids early in the day and as little as possible after 4 p. m. This includes water, soup and milk. If the child is thirsty, moisten her lips with a little water given from a teaspoon. The child should have her main meal at noon and an early light supper. She should be put to bed between 7 and 8 o'clock and should sleep alone in a well ventilated room. Be sure that she uses the toilet before going to bed. Take her up at 10 o'clock to urinate and awaken her thoroughly, for if she is but half awake she will only partially empty her bladder. If the bed is already wet by this time, take her up half an hour earlier each night until the bed is found dry. Then take her up regularly at this time. If the bed is wet by morning take her up at 6 o'clock. While establishing dry habits it may be necessary to take the child up a second time in the night. If so, determine at what time she wets the bed and awaken her just before. Gradually lengthen the period between the first awakening and the second by taking her up a little later each night. Expect a dry bed and give approval or rewards when that object is accomplished.

CORAMINE IN CARDIAC DECOMPENSATION

To the Editor:—I should like to have an unbiased opinion as to the value of coramine in the long-term treatment of chronic cases of circulatory failure. The Ciba Company is circulating a pamphlet recommending from 1.5 to 4 cc. of coramine three times a day for a period of weeks, claiming good results. My mother, aged 58, weight 150 pounds (59 Kg.), has hypertensive-arteriosclerotic heart disease with a blood pressure that has been falling recently. An electrocardiogram two years ago revealed an intraventricular heart block with an auricular flutter. Her pulse is regular at 80. The liver is down a hand's breadth. There are peripheral edema and ascites, which are increasing slowly at practically complete rest in bed. Theobromine sodium salicylate does not affect the edema nor is salyrgan as efficacious as in the past—it merely brings on a feeling of greater comfort for a few days. One and one-half grains (0.1 Gm.) of digitalis is taken daily. I would appreciate your views in this matter. M.D., Illinois.

ANSWER.—There is no proof of any strong diuretic effect from coramine such as would be required in this case, or even of a favorable synergistic action with other drugs like digitalis or diuretics like salyrgan.

It seems as if the patient here described has had good treatment and that not a great deal can be expected in the way of improvement by any therapy.

A trial of mercupurin (the sodium salt of trimethyl-cyclopentane-dicarboxylic acid-methoxy-mercury-allylamide-theophylline), however, and of the use of theophylline with ethylene diamine (aminophylline) intravenously 0.26 Gm. (4 grains) daily for a few days, or even of the Southey tubes if there is much dropsy, would be worth while. These measures are all, however, simply temporary.

RABIES

To the Editor:—I was asked to criticize the following statement taken from a health manual prepared for school children: "If a person is bitten by a dog that has rabies, that person will have rabies and will be almost sure to die unless he is given the Pasteur treatment in time." The American Red Cross Manual says: "If the disease once develops it is never cured." Is it correct that every person bitten by a dog with rabies acquires rabies? Is it true that if the disease once develops it is never cured even though the Pasteur treatment is used? M.D., Ohio.

ANSWER.—No, not every person bitten by a dog with rabies will have rabies. In human beings rabies once developed is practically always fatal. The Pasteur treatment is without effect on the course of the disease once it is established. The Pasteur treatment is effective only when given in the incubation period—the period between the bite or introduction of the virus and recognizable clinical manifestations of rabies.

DISCOLORATION AFTER BURN

To the Editor:—February 15 I treated a second degree burn located on the inner aspects of both thighs in the regions of Scarpa's triangles, measuring about 6.5 by 15 cm., with a 5 per cent solution of tannic acid. The burn was caused by spilling hot tea in the lap. After the coagulum came off there remained a slate color discoloration of the healed area. Such a result would make fine material for a law suit if located elsewhere. How did this come about? Is it permanent? M.D., Illinois.

ANSWER.—Aqueous solutions of tannic acid, when used in the treatment of burns, do not cause discoloration of the area under the coagulum. Discoloration following scalds is usually due to hyperemia and has a tendency to disappear.

MALARIA NOT CAUSE OF VERTIGO AND RESTLESSNESS

To the Editor:—Is there any evidence that chronic malaria causes vertigo, arterial hypertension and restlessness, the latter being more severe at night?

HAWKINS K. JENKINS, M.D., Conway, S. C.

ANSWER.—There is no scientific evidence available demonstrating that chronic malaria causes vertigo, arterial hypertension or restlessness, more severe at night.

Some of the older writers, basing their observations entirely on clinical evidence, have tried to prove that malaria affects the arteries, producing a chronic arteritis, but there is no pathologic evidence proving this to be true.

NICOTINE IN CIGARETS

To the Editor:—Have you any data on the amount of nicotine contained in one ordinary cigaret? What is considered a toxic dose of nicotine? Is nicotine soluble in aqueous solutions from the leaf? In other words, would any appreciable amount of nicotine be taken in solution from a cigaret in a bottle of milk? Are there any other toxic products soluble in water from tobacco? M.D., Indiana.

ANSWER.—The average American cigaret weighs about 1 Gm. and contains from 1.69 per cent (Sollmann) to 2.2 per cent (Bamberger) of nicotine. Hence one cigaret contains about 2 mg. of nicotine. Nicotine is soluble in water, and most of its salts are also soluble. Small amounts of nicotine, nicotine, nicotine, isonicotinine, pyrrolidine and methyl-pyrroline are also found in cured tobacco. It occurs in tobacco as the malate and as other organic salts. The toxic dose of pure nicotine is about 60 mg., although the concentration has much to do with the toxicity and the rapidity of action. The effects of tobacco, when smoked, are due to nicotine and to toxic substances formed during the process of ignition. If one cigaret fell into a bottle of milk, the amount of nicotine extracted would hardly exceed 2 mg. This might cause the milk to be nauseating, but no other harmful action would be expected.

PACKING AFTER SUBMUCOUS RESECTION

To the Editor:—In the March 26 issue of THE JOURNAL in Queries and Minor Notes there was a query about packing of the nose after submucous resection of the nasal septum. Originally I packed the nose after resection with petrolatum gauze. As this was a messy procedure, I changed over to a special compressed nasal splinting supplied by Meyer and Phelps. This packing is similar to the nasal tampons recommended by Ballenger except that, being supplied in rectangular strips, they had to be shaped to suit the curvature of the nose before introduction. After some time I had difficulty in procuring a supply of this material and so I decided to follow the advice given by H. Lamber Lack in Index of Treatment, 1925 edition, page 822, to replace the flaps carefully and not use any packing. I have been using this method for the last eighteen months and not only have I had no complications but my patients have invariably had a shorter and less troublesome recovery. The most marked feature is the absence of mucous discharge, which used to be copious whatever the method of postoperative packing used.

P. KERALA VARMA, Coimbatore, South India.

VESICOVAGINAL FISTULA

To the Editor:—In THE JOURNAL, July 2, page 83, a physician from Virginia asks for advice regarding a vesicovaginal fistula. I have found a convenient, simple, inexpensive method for helping women with such lesions. A small sea sponge is purchased, one that will fit comfortably into the vaginal cavity when dry. As the sponge becomes moist it expands and in this way effectively closes the fistula to a large extent. The sponge can be removed two or three times a day and cleaned with hot water and reinserted dry. This method has worked quite well in a number of instances and in some cases in which the fistula extended into the rectum. A vulva pad worn at the same time is also helpful.

IRA I. KAPLAN, M.D., New York.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 20-22. Sec., Dr. J. N. Baker, 517 Dexter Ave., Montgomery.

ALASKA: Juneau, Sept. 6. Sec., Dr. W. W. Council, Box 561, Juneau.

ARIZONA: *Basic Science*. Tucson, Sept. 20. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Medical (Regular)*. Little Rock, Nov. 3-4. Sec., State Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Medical (Eclectic)*. Little Rock, Nov. 3. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock. *Basic Science*. Little Rock, Nov. 7. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock.

CALIFORNIA: *Reciprocity*. San Francisco, Sept. 14, and Los Angeles, Nov. 16. *Written examinations*. Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Basic Science*. New Haven, Oct. 8. *Prerequisite to license examination*. Address State Board of Healing Arts, 1895 Yale Station, New Haven.

DISTRICT OF COLUMBIA: *Basic Science*. Washington, Dec. 26-27. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, Nov. 14-15. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 11-12. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDaho: Boise, Oct. 4-5. Commissioner of Law Enforcement, Hon. J. L. Balderston, 205 State House, Boise.

ILLINOIS: Chicago, Oct. 18-20. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

MARYLAND: *Medical (Regular)*. Baltimore, Dec. 13-16. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Medical (Homopathic)*. Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: Lansing, Oct. 12-14. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science*. Minneapolis, Oct. 4-5. Sec., Dr. J. Charley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical*. Minneapolis, Oct. 18-20. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: *Reciprocity*. Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEBRASKA: *Basic Science*. Lincoln, Oct. 4-5. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW HAMPSHIRE: Concord, Sept. 15-16. Sec., Board of Registration in Medicine, Dr. Fred E. Clow, State House, Concord.

NEW JERSEY: Trenton, Oct. 18-19. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. Le Grand Ward, 135 Palace Ave., Santa Fe.

NEW YORK: Albany, Buffalo, New York, and Syracuse, Sept. 19-22. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: *Reciprocity*. December. Sec., Dr. William D. James, The Hamlet Hospital, Hamlet.

OKLAHOMA: *Basic Science*. Oklahoma City, Nov. 30. Sec. of State, Hon. Frank C. Carter, State Capitol Bldg., Oklahoma City. *Medical*. Oklahoma City, Dec. 14. Sec., Dr. James D. Osborn Jr., Frederick.

OREGON: *Basic Science*. Portland, Nov. 19. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PUERTO RICO: Santurce, Sept. 6-10. Sec., Dr. O. Costa Mandry, Box 3854, Santurce.

SOUTH CAROLINA: Columbia, Nov. 8. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

VERMONT: Burlington, Feb. 14. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 14-16. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WISCONSIN: *Basic Science*. Madison, Sept. 24. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical*. Madison, Jan. 10-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

WYOMING: Cheyenne, Oct. 3 (probable date). Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the *National Board of Medical Examiners* and *Special Boards* were published in THE JOURNAL, July 30, page 471.

Connecticut March Examinations

Dr. Thomas P. Murdock, secretary, Connecticut Medical Examining Board, reports the written examination held at Hartford, March 8-9, 1938. The examination covered seven subjects and included 70 questions. An average of 75 per cent was required to pass. Thirty-two candidates were examined, 24 of whom passed and eight failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine.....	(1937)		77.3*
Boston University School of Medicine.....	(1935)		75.1
Harvard University Medical School.....	(1935)		80.2
Tufts College Medical School.....	(1936)		75.
75, (1937) 75.* 76, 77, 80.7,* 82.5*			
University of Minnesota Medical School.....	(1937)		78.6

Creighton University School of Medicine.....	(1936)	75
Cornell University Medical College.....	(1936)	83.4
Long Island College of Medicine.....	(1936)	75.4
Syracuse University College of Medicine.....	(1937)	76.2
University of Rochester School of Medicine.....	(1934)	78.1
Univ. of Pennsylvania School of Medicine.....	(1935)	77.5
Vanderbilt University School of Medicine.....	(1935)	75.5
University of Vermont College of Medicine.....	(1937)	81.2*
Marquette University School of Medicine.....	(1937)	75
McGill University Faculty of Medicine.....	(1932)	75
Regia Università di Napoli Facoltà di Medicina e Chirurgia.....	(1936)	75
Universität Basel Medizinische Fakultät.....	(1935)	82.1

School	FAILED	Year Grad.	Per Cent
Loyola University School of Medicine.....	(1937)		69.5
St. Louis University School of Medicine.....	(1937)		68.9
Ludwig-Maximilians-Universität Medizinische Fakultät München.....	(1923)		69.3
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest.....	(1930)		67.9
Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia.....	(1934)		67.7
Regia Università di Napoli Facoltà di Medicina e Chirurgia.....	(1935)		68.1
Osteopaths.....	(1927),†	(1933)†	

Twenty-one physicians were successful in the oral examination held for endorsement applicants at Hartford, March 22. The following schools were represented:

School	PASSED	Year Endorsement Grad. of
Yale Univ. School of Medicine.....	(1934)* (1935), (1936, 2) N. B. M. Ex.	
University of Louisville School of Medicine.....	(1936) N. B. M. Ex.	
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1929) Maryland	
Boston Univ. School of Medicine (1933)* New Jersey, (1934) N. B. M. Ex.		
Harvard University Medical School.....	(1934), (1936, 2) N. B. M. Ex.	
Tufts College Medical School.....	(1935) N. B. M. Ex.	
Albany Medical College.....	(1929) N. B. M. Ex.	
Columbia University College of Physicians and Surgeons.....	(1932), (1933) N. B. M. Ex.	
Cornell University Medical College.....	(1933) N. B. M. Ex.	
New York University, University and Bellevue Hospital Medical College.....	(1934) New York	
Woman's Medical College of Pennsylvania.....	(1915)* New York	
University of Vermont College of Medicine.....	(1936) N. B. M. Ex.	
McGill University Faculty of Medicine.....	(1930), (1935) N. B. M. Ex.	

* License has not been issued.

† Examined in surgery.

‡ Examined in medicine.

Missouri Reciprocity and Endorsement Report

Dr. Harry F. Parker, State Health Commissioner, reports four physicians licensed by reciprocity and one physician licensed by endorsement on May 2 and June 1, 1938. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Kansas School of Medicine.....	(1934)		Kansas
St. Louis College of Physicians and Surgeons.....	(1909)		Illinois
Washington University School of Medicine.....	(1936)		Colorado
University of Tennessee College of Medicine.....	(1935)		Tennessee

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
Washington University School of Medicine.....	(1936) N. B. M. Ex.	

Puerto Rico March Examination

Dr. O. Costa Mandry, secretary, Board of Medical Examiners, reports the written and practical examination held at San Juan during the month of March 1938. The examination covered 17 subjects and included 160 questions. An average of 70 per cent was required to pass. Seven candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Yale University School of Medicine.....	(1936)		90.4
Loyola University School of Medicine.....	(1917)		76.3
Université de Paris Faculté de Médecine.....	(1917) 81.2, 91.1		
Université de Lausanne Faculté de Médecine.....	(1935)		80.6

Two physicians were licensed by reciprocity and one physician was licensed by endorsement on February 9 and April 30. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Regia Università di Napoli Facoltà di Medicina e Chirurgia.....	(1898)		New York
Licentiate of the Royal College of Physicians, of the Royal College of Surgeons, Edinburgh, and of the Royal Faculty of Physicians and Surgeons, Glasgow.....	(1935)		New York

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
Tulane University of Louisiana School of Medicine....	(1936) N. B. M. Ex.	

Book Notices

Medical Writing: The Technic and the Art. By Morris Fishbein, M.D., Editor, *The Journal of the American Medical Association*, Chicago. With the assistance of Jewel F. Whelan, Assistant to the Editor. Cloth. Price, \$1.50. Pp. 212, with 34 illustrations. Chicago: American Medical Association, 1938.

This volume is the style book of the American Medical Association Press but it is also a vade mecum for the medical editor and the medical writer. Those who knew the "American Medical Association Style Book" of 1915, the "Suggestions to Medical Authors and American Medical Association Style Book" of 1917 and the series of articles entitled "The Art and Practice of Medical Writing," first published in *THE JOURNAL* in 1925 and later in the same year brought out in book form, cannot toss aside this new volume as more of the same and get along with the old tools. The new work differs more from its predecessor of thirteen years ago than the map of Europe of 1938 differs from that of 1925. The present volume contains nearly twice as much material as the volume published in 1925 and is largely newly written. In some parts which have been retained there is evidence that the author, with true editorial objectivity, has applied his own precepts. Even if one were unacquainted with the author's qualities, this alone would make for confidence in the book; here is a master who can improve on his own good work, a teacher of writing who also can write.

The work is a style book, as has been said, but so far is the craft of the physician removed from that of the editor that perhaps not all members of the medical profession know the purpose of a style book. Such a volume is the manual used, in a publishing house, by the manuscript editors. Their duty is not to rewrite a manuscript, even though they may be tempted and qualified to do so. The paper is the author's, not the editor's, and it should retain as much of the author's mode of expression as is consistent with clearness, reasonably good general form, good taste and correctness of sentence structure and diction. Yet experience in any publishing house establishes certain practices, expressions and spellings as preferable to others and both experience and mechanical equipment dictate the manner in which text, illustrations, tables, headings, captions, legends and bibliographic references shall appear in print. Years of experience have demonstrated that in the publications of any house considerable uniformity in these matters is desirable. To maintain such uniformity, a style book is essential.

Although the work under consideration applies particularly to publications of the American Medical Association, the editors of nearly all medical journals printed in English could take over most of the volume as their own style manual. They would find therein hints on the editing of titles, an important matter which often is neglected. An extraordinarily useful chapter on words and phrases includes about three pages of objectionable and preferred expressions in parallel columns and almost five times as many pages of concise discussion of other usages. The chapter on spelling is fully as informative as the one just mentioned. That on numbers includes parallel tables of various systems of weights and measures, and the sample footnotes under "Bibliographic Material" contain just the details which forever are slipping from the editor's mind. The long chapter on illustrations is itself excellently and informatively illustrated, as is that on charts and tables. The exhaustive list of abbreviations of names of periodicals is invaluable in the editorial office. All of the foregoing material is easily accessible by means of the detailed index which closes the volume.

There are vastly more physicians than medical editors, and a considerable number of the physicians write. Much of this book, therefore, is for the medical author and if he should procure the book with the intention of reading only chapters I, II, III, XII and XV he would find himself repaid. In these chapters he would learn what makes a medical paper acceptable and why so many are not acceptable. He would become acquainted again with the evils of fancy writing, of verbosity, of poor grammar, of slang, of loss of the point of view and of the use of nouns as adjectives and, meanwhile, he would have many a satisfying laugh over the horrible examples which are interspersed. He would find directions as to the technic of

the case report, a paragraph on confusion of time which most medical authors need to read, a section on the purpose, the value and the form of the summary and conclusions of a medical paper and, again, examples. Every writer could profitably read the well illustrated chapter on preparation of the manuscript and the chapter on revision. However, more than the five chapters just mentioned are useful to the author. He, as well as the editor, should give attention to the title of the paper, and there probably is not a single medical writer who sometimes does not make the errors that are pointed out in the chapter entitled "Words and Phrases." The inexperienced author will find, in chapter XI, full directions on how to find the literature on the subject of his interest, and many a writer, whether new at the craft or an accepted journeyman, could improve the effectiveness of his presentation if he would familiarize himself with the material on illustrations, charts and tables.

Veteran medical editors know their own weaknesses; doubtless they have acquired this book. They also know the weaknesses of the medical author and of the recruit within their own ranks. It is safe to say that the battered old men—all veteran editors are battered and they mellow early—will urge this volume, all of it, on every colleague who spends part or all of his time rumpling his hair in the role of author or editor.

The Life of Chevalier Jackson: An Autobiography. Cloth. Price, \$3.50. Pp. 229, with illustrations. New York: Macmillan Company, 1938.

This autobiography of a distinguished American physician is unique in many ways. It is the story of a pioneer in a unique field. It is illustrated with colored reproductions of many of the original paintings by Dr. Jackson which certainly approach professional accomplishment. It is personal and yet restrained. It has a beautiful philosophy of life, which its author has no doubt reached through years of thought. It is written with a high moral purpose; namely, to extend the campaign against useless deaths due to the swallowing of caustic substances and foreign bodies.

As one reads the details of the growth and development of Dr. Jackson, his career is much more understandable. As a boy he was sentimental and kind, and intolerant of pain and suffering. As he grew up he was, because of his small size, frequently bullied and suppressed. As a youth he had opportunity to study art and plumbing, so that his fingers developed the remarkable facility which gave him leadership in his field. He studied his medicine in a good school, and he learned persistence by the hard work necessary to work his way through school and to gain achievement.

As might be expected, this book contains the intimate details of the development of bronchoscopy. Next comes the story of the beginnings of the battle for a federal caustic act providing for poison antidote labels. It is to the extension of this work that Dr. Jackson is devoting his declining years after giving up active practice. Every physician will derive inspiration as well as information from this book.

A Clinical and Genetic Study of 1,280 Cases of Mental Defect. By L. S. Penrose. Medical Research Council. Special Report Series, No. 229. Paper. Price, 2s. 6d.; 80 cents. Pp. 159. London: His Majesty's Stationery Office, 1938.

This is a descriptive, statistical summary of certain of the data pertaining to cases studied in one of the English institutions for the mentally defective. The material listed and statistically studied includes among other things a careful evaluation of the intellectual level of the parents and a consideration of the degree of interparental relationships. There is a brief analysis of the results of some special examinations, such as skeletal abnormalities and the presence of syphilis and deafmutism. The work has been carefully and thoroughly done, in contrast to some of the early investigations of this subject from which such far-reaching and misleading conclusions were drawn. Most of the pamphlet is taken up with tables. The conclusions are drawn in a conservative and dignified fashion. As might be expected, they are not extensive or far reaching. The author concludes that "the etiology of mental defect is multiple and a facile classification of patients in the series into primary and secondary or endogenous and exogenous cases would have only

led to a fictitious simplification of the real problems inherent in the data." He found no unequivocal evidence for sex-linked genes in the causation of mental defect, but he did feel that there was definite evidence in favor of mendelian recessivity and dominance respectively in some of the rarer conditions found among the patients. He believes maternal age to be a significant factor in mongolism.

Klinik und Therapie der Herzkrankheiten und der Gefässerkrankungen. Vorträge für praktische Ärzte. Von Privatdozent Dr. D. Schierf. Fourth edition. Paper. Price, 7.20 marks. Pp. 319, with 10 illustrations. Vienna: Julius Springer, 1938.

The popularity of this excellent brief summary of heart and blood vessel diseases is attested by the issuance of four editions in a little over three years. This edition, like the previous ones, retains the simplicity of presentation so helpful for the general medical reader. For the most part the revisions have been minor and have necessitated the addition of twenty-eight pages. The author has added a brief paragraph on auscultation, a section on myxodema heart and sections on angina pectoris in pulmonary embolism, total thyroidectomy in heart disease, angina pectoris in ovarian dysfunction and the menopause and angina pectoris in hyperthyroidism and hypothyroidism. The author has made considerable changes in the section on hypertension and the one on angina pectoris and coronary thrombosis. The book should serve the useful function of presenting the point of view of the Vienna school, with which the author has been intimately associated.

Fractures and Dislocations. By Philip Lewin, B.S., M.D., Associate Professor of Orthopaedic Surgery, Northwestern University Medical School, Chicago. Volumes I and II. National Medical Monographs. Edited by Morris Fishbein, M.D. Cloth. Price, \$6, per set. Pp. 318; 319-688, with 82 illustrations. New York: National Medical Book Co., Inc., 1937.

This is a thorough and comprehensive review of the entire field of fractures and dislocations. Much space is given to thorough consideration concerning the mechanics of healing, the factors inhibiting union, nerve injuries and other complications, with diagnostic and therapeutic discussions. Attention is called to the favored joint positions; the general rules of treatment of compound fractures are discussed and also the treatment of shock. Finally, in the general part, indications are developed for the open treatment of fractures. There is a good description of the bone graft technic, and a section is devoted to the treatment of pathologic fractures, including the treatment of pseudarthrosis of the tibia in children. Fractures of the spine and their mechanisms, the different reduction methods, are given particular consideration in the problem of compression operations.

In the second part, the author deals with the fractures of the upper extremity, the humerus. He gives a good classification as well as a description of the different types; the operative approach in fractures of the neck of the humerus and the tuberosities, the methods of open reduction and resection; the technic of the open reduction in elbow fractures, and finally the treatment of Volkmann's contracture. There is a good chapter on fracture of the head of the radius and on the treatment of both forearm bones, in which Böhler's, Anderson's, Thompson's and other methods are described. In the lower extremity the fracture of the neck of the femur has naturally been given especial consideration in the classification, etiology and discussion of the treatment. Among the open methods the nailing, Jones's method, the trochanteric graft, Brackett's, Magnuson's, Colonna's and Whitman's methods are described.

Of interest is the chapter on injuries of the knee, and particular consideration is given to Pott's fracture and fractures of the lower end of the tibia in general and fracture-dislocations of the ankle. In fracture of the os calcis, the methods of Cotton, Magnuson and Böhler are described. There is a chapter on the fractures of the smaller bones, the metatarsals and the phalanges. A section is devoted to dislocations, and among those of the spine the dislocation of the lumbar vertebrae as in spondylolisthesis is of particular interest. There are smaller chapters on the dislocation of the sternum and the ribs and the acromioclavicular dislocations; another chapter is devoted to traumatic dislocation of the shoulder, which includes operative procedures for habitual dislocation of the joint. It is com-

mendable that the lesser dislocations of the hand, particularly dislocations of the thumb and fingers, as well as dislocations of the carpal and semilunar bones, are given adequate consideration. The dislocation of the femur occupies, of course, more space; the different types are described and the appropriate methods are given. The book is extremely comprehensive and there does not seem to be any traumatic condition which has not been given adequate attention. It is a carefully compiled compendium of the entire field of fracture-dislocations, and the author does not try to emphasize his own preferences. This objectivity in the treatment of the topic is a noteworthy feature.

Management of the Sick Infant and Child. By Langley Porter, B.S., M.D., M.R.C.S., Dean, University of California Medical School and Professor of Medicine, and William E. Carter, M.D., Director, University of California Out Patient Department. Fifth edition. Cloth. Price, \$10. Pp. 874, with 94 illustrations. St. Louis: C. V. Mosby Company, 1938.

A mass of valuable material from many sources has been contributed on the subject of sick infants. The endeavor in this book is to combine in a single volume the manifestations of diseases during infancy. An endeavor also has been made to present the measures that will aid in the handling of sick infants. The material is prepared particularly for the general practitioner. For these reasons the method of presentation deviates from that usually found in textbooks on pediatrics. The first section deals with common symptoms in infants such as vomiting, diarrhea and constipation. There follows a section covering nutrition and then material on pain, tenderness, coughs, convulsions and prematurity. There is then a discussion of the diseases affecting the various body systems. A chapter on behavior and a discussion of infectious diseases follows. Especially valuable is the third section of the book, which presents the methods of procedure useful in dealing with sick children. The methods outlined are those which have stood the test of practice. Strict aseptic precautions in the use of any procedures which demand breaking of the skin is insisted on. This portion of the book is particularly well illustrated. Formulas and recipes, as well as therapeutic mixtures for various conditions, are appended. The physician in general practice, as well as the specialist in pediatrics, should find this book useful.

Rheuma und Hautreiz: Leitgedanken für den Praktiker über das Rheumatische in seiner Beziehung zum wesen örtlicher Reize. Von Dr. Walter Ruhmann, Spezialarzt für innere Krankheiten und Nervenleiden in Berlin. Paper. Price, 5 marks. Pp. 170, with 25 illustrations. Mitlenwald (Bayern): Arthur Nemayer Verlag, 1937.

This book deals in the main with treatment of various rheumatic diseases by means of substances or agents which produce skin irritation or hyperemia. A great deal of space is devoted to the history and early use of such modalities. The author separates the various disorders of a rheumatic nature into the commonly accepted nomenclature in this country, namely he differentiates arthritis, perineuritis and fibrositis from the general term rheumatoid arthritis. He calls attention to the subcutaneous fibrotic nodules which make palpation important in the diagnosis and to the various phases and symptoms of these entities. Skin irritation in the treatment of rheumatic disease is divided into mechanical, chemical and physical methods. Some space is devoted to the early history and use of mechanical counterirritants, namely superficial laceration and production of hyperemia by means of suction cups. Under irritation by chemicals are given injections of bee venom, extract of ant (formic acid) and the plant nettles. Histamine is mentioned and the effect of iontophoresis discussed. Other means of producing hyperemia by thermal methods are given and these are the usual physical therapy methods such as ultraviolet rays, paraffin packs, mud and clay, warm and moist air, histamine baths and various electrical modalities. The effect of x-rays in treatment is questionable. In all these methods of treatment he suggests that they are more successful in the acute but also are of some advantage in the chronic conditions and more useful when a few rather than many joints are involved. He explains that the action of skin irritants is due to an actual blocking of nervous impulses but also that the successful treatment depends on the aiding of nature to make a recovery. Some space is

devoted to the local and general effects of counterirritants. This is an excellent book, dealing purely with the effects of the various agents on the skin in the treatment of rheumatism. Many of the agents in this country are used with other forms of therapy. Too little attention is drawn to the other phases of treatment, so that for the general practitioner this book is somewhat limited; however, the subject matter is complete and excellently written.

Clinical Methods: A Guide to the Practical Study of Medicine. By Robert Hutchison, M.D., LL.D., F.R.C.P., Consulting Physician to the London Hospital and to the Hospital for Sick Children, Great Ormond Street, London, and Donald Hunter, M.D., F.R.C.P., Physician (with charge of Out-Patients) to the London Hospital. Tenth edition. Cloth. Price, \$4.50. Pp. 658, with 163 illustrations. New York: Paul B. Hoeber, Inc., 1938.

This little book presents in compact form, small enough to be easily carried in the pocket, a brief outline of the more important clinical methods in common use in the bedside study of the patient. It is well arranged for the purpose of the medical student or ward clerk to carry to the bedside as a convenient manual in "working up" the cases to which he may be assigned or as a brief reference manual for review or office reference of the practitioner who may have found himself needing to refresh his knowledge of laboratory methods. Covering, as it does, anamnesis, physical examination, laboratory methods and special means of examination, such as with x-rays and electrocardiography, it is manifestly impossible to deal with each of these in such detail as would be desirable in a textbook or library reference work and the medical student should not attempt to substitute this book for the more comprehensive textbooks. It is arranged by systems, covering in one group the various examinations of the heart, the lungs or the stomach. It would seem desirable, however, if the results of physical examination are to be considered to give them relatively more space; e. g., the manifestations of heart disease occupy two and one-half pages, while ten pages is devoted to the discussion of the electrocardiogram and the same amount of space to the sphygmogram. The x-ray examination of the stomach and colon is not included. The characteristic British phraseology may be found in places pleasing and at times slightly confusing to the American student. It is to be noted that in some sections, notably in the examination of the blood and of the stomach, the tests and methods described are those in more common use in England and that methods commonly used in this country (e. g., the Sahli, Dare or Newcomer hemoglobinometers) are not mentioned.

Der Meniskusschaden als klinisches, anatomisch-pathologisches und unfallmedizinisches Problem. Von Priv.-Doz. Dr. Hans Schaefer, Oberarzt der chirurgischen Universitätsklinik, Zürich. Paper. Price, 10 marks. Pp. 156, with 55 illustrations. Leipzig: Georg Thieme, 1938.

This is a well written, comprehensive monograph on the topic of injury and disease of the semilunar cartilage. After generally reviewing anatomy, physiology and roentgenograms of the knee joint, the author especially discusses the visualization of the knee by contrast mediums, with a description of the x-ray observations with the latter methods. He then deals at some length with the differential diagnosis, particularly arthritis deformans, fat pads and cruciate lesions, such as osteochondritis dissecans. Of interest is the section on the conservative treatment, particularly his remarks on the closed reduction, although they are not particularly new. In the chapter on operative indications and contraindications and operative technic he describes special instruments, operative preparation and asepsis, and the operative technic, using Timbrell Fisher's incision rather than Jones's. Consideration is given to postoperative complications such as infections, effusions, neuromas and postoperative instability. Of interest is a short paragraph on the regeneration of the meniscus. The most valuable section is that on pathology, which contains a section on microscopic examination, on juvenile and adult cartilage, on lipid degeneration, many of the results being taken from the previous work of Tobler and Ishido. Of particular interest is the histologic appearance of the healing of tears, so-called degeneration of ground substance, calcification, necrosis and cellular proliferation, as well as degenerative changes, ganglions and cysts in the menisci. A chapter is

devoted to the evaluation of the histologic appearances and to the significance of meniscus injuries in general in insurance and indemnity medicine. The book represents a painstaking and thorough study of the subject and affords highly profitable reading.

Massage and Remedial Exercises in Medical and Surgical Conditions. By Noël M. Tidy, Member of the Chartered Society of Massage and Medical Gymnastics. Third edition. Cloth. Price, \$5.25. Pp. 456, with 182 illustrations. Baltimore: William Wood & Company, 1937.

This book is unusual because it makes a definite attempt to show a logical relationship between a pathologic condition and its treatment with massage and exercises. Lay persons engaged in physical therapy as a profession are apt to overlook the important medical aspect of a problem. They utilize physical methods as a panacea for all afflictions and there seems to be no theoretical reason for various forms of therapy. Sister Tidy has written a valuable book because it is as much a synopsis of medicine and surgery as it is a textbook on physical treatment. She has borrowed freely, and with proper acknowledgment, from medical literature and has utilized the textbooks of such men as Tubby, Mennell and Bohler among others. The subject matter is well organized and complete. The print is small and the volume is loaded with essential information. The illustrations and diagrams are good and well placed. The contents are similar to those of a standard surgical textbook. Every known condition requiring massage and exercise is presented. The book should be invaluable to physical therapists, medical gymnasts, physical culturists and allied professions. The nurse, medical student, general practitioner and specialists will find it excellent for reference.

Manual of Psychiatry and Mental Hygiene. By Aaron J. Rosanoff, M.D. Seventh edition. Cloth. Price, \$7.50. Pp. 1,091, with 87 illustrations. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Limited; 1938.

For almost a quarter of a century this manual has been a standard textbook for American medical students. The author has caught the feeling of the times and has made appropriate improvements, so that the present volume has been brought down to date so far as possible. With the appearance of this edition mental hygiene, which is making such great strides as part of psychiatry, is for the first time stressed, thus removing the book from that class of textbooks which presents only diagnostic and treatment procedures from the point of view of the hospitalized case. The book is grossly divided into six parts, the last of which consists of appendixes. As one would expect, the first part deals with a general discussion of psychiatry from the standpoint of etiology, symptomatology and neuropsychiatric syndromes; in other words, old fashioned systematic psychiatry. The second part is devoted to special psychiatry, wherein each specific diagnosis of the various clinical entities is discussed. As a rule single chapters are filled with so much material that only one disease at a time can be included, so that such conditions as mongolism and amaurotic family idiocy which form paragraphs in other textbooks are here given proper unitary emphasis. In this part is a rather bizarre classification of the schizoprenias under the term "chaotic sexuality." The author's thesis for this means of handling the schizoprenias is probably justified by much advanced thinking about this subject; in fact, so far advanced that if it were to be used as a classroom discussion its value would be highly problematic. The third part of the volume is devoted to the practice of psychiatry, in which methods of investigation and therapeutic technics, including psychoanalysis and medicolegal problems, are analyzed in a fashion superior to the discussion of these subjects in most other textbooks on psychiatry. The fourth part is a single chapter devoted to mental hygiene. Since the subject is so big, a discussion comprising less than a hundred pages here could not be considered complete. It does give some of the points of view of the practical person in the child guidance sphere and of the individual who needs to work in a community to educate in the field of mental hygiene. The last section, previous to the appendixes, is devoted to special laboratory and psychologic procedures. Here the Stanford-Binet test is discussed, based on the 1916 standardization, which

is considered by psychiatrists but not by psychologists to be adequate for daily use. In spite of the fact that there are various places where discussions are too short and a few where they are unnecessarily extended, and the fact that there are attempts to bring the volume so close to being abreast of the time that the author has overshot his mark, it must be admitted that the present volume far exceeds in comprehensiveness and soundness practically all other textbooks on psychiatry.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Cerebral Hemorrhage in Relation to Rupture of Tumor of Brain and Strain.—Van Arsdale, the husband of the claimant in this case, an employee of the Houston Lighting and Power Company, was 28 years old, of robust physique, and apparently in good health. His employment involved heavy lifting and manual labor. A year or more before his death he had had occasional headaches, but he had not suffered from them for at least six months before the fatal event. On August 25, after attempting in the course of his employment to move a refrigerator weighing about 300 pounds, he experienced excruciating pain radiating from his jaw to the region of his temple. He drove home in one of the company's trucks but manifested some evidence of confusion as to location and direction on the way. He complained of severe pain when he arrived home and immediately went to bed. A physician was called, who, after calling a consultant, ordered Van Arsdale removed to a hospital. He died there about twenty-four hours after the initial attack. The attending physicians testified that death was caused by a cerebral hemorrhage and that "the most probable diagnosis was that he was suffering from a tumor of the brain, which ruptured, causing the hemorrhage."

The industrial accident board of Texas rejected the widow's claim for compensation under the Texas workmen's compensation act and she petitioned the district court, Brazoria County, to set aside the board's order. In her petition she alleged that her deceased husband, in attempting to move the refrigerator, had "exercised a severe and unusual physical strain, causing his blood pressure to rise or to be increased"; that the strain and the increased blood pressure placed a strain or pressure in and on his brain, spinal cord, heart, other organs and caused them to rupture, and that hemorrhage resulted which eventuated in death. The jury, in response to special issues submitted to it, found that the workman had sustained a hemorrhage of the brain and that the hemorrhage was an accidental injury received in the course of his employment, but that he was not suffering from a tumor of the brain when the hemorrhage occurred. Judgment was rendered for the widow, and the employer's insurer appealed to the court of civil appeals of Texas, Amarillo.

The appellant insurance company contended that the trial court erred in overruling its motion for a peremptory instruction in its favor, claiming the evidence was not preponderating that the workman sustained in the course of his employment an accidental injury which caused or contributed to his death. The court of civil appeals, however, ignoring the finding of the jury that the deceased was not suffering from a tumor of the brain, concluded that in view of the testimony it was clear that the mere moving of a refrigerator by a man of the physical strength of the deceased would not of itself have caused a hemorrhage of the brain. It was shown, the court thought, that the deceased was undoubtedly suffering from a tumor of the brain; that the blood vessels of the brain in the region of such tumors are diseased and greatly weakened; and that the slightest strain or exercise by a person so afflicted may increase the blood pressure and cause a rupture of the blood vessels in the region of the tumor. One physician, in response to a hypothetical question, stated that in his opinion a strain such as that of moving the refrigerator might have caused the death.

This evidence, said the court of civil appeals, would have warranted the jury in concluding that the hemorrhage and the resulting death were due, in part at least, to the physical effort involved in moving the refrigerator.

The appellant insurance company complained further of the action of the trial court in permitting a physician to answer a hypothetical question propounded to him by the claimant's attorney, on the ground that the answer would necessarily be based on facts and circumstances not incorporated in the hypothetical question and known only to the witness and would therefore be speculative, conjectural and hearsay. In answering such a question, said the court of civil appeals, a witness should not go beyond the testimony and consider outside matters even though they are known to him. The court concluded, however, that no error had been committed in this case, because on cross examination this medical witness, after testifying that in his answer to the hypothetical question he had taken into consideration other matters than those included in it, in response to further questions stated that those matters were identified with the examination made by him and the other attending physician and with his conclusion and diagnosis of the case, all of which matters were in fact in evidence.

In the petition the widow of the deceased based her claim on the allegation that the strain of moving the refrigerator caused the workman's blood pressure to be increased, which resulted in the fatal hemorrhage. The appellant insurance company complained that this theory was not submitted to the jury, because the issues submitted to it were in general form and sought to elicit from it findings as to whether or not the workman sustained a hemorrhage of the brain, and, if so, whether or not such hemorrhage was an accidental injury sustained in the course of his employment. The testimony showed, however, in the opinion of the court of civil appeals, that, for such a result as was alleged in the petition to follow, the effort of moving the refrigerator must have been accompanied by some other condition which made such a hemorrhage possible. The claimant did not plead in her petition the weakened condition of the blood vessels of the brain caused by the presence of the tumor but simply based her case on the straight allegation that in moving the icebox the deceased was subjected to such an unusual strain as of itself to result in a rupture of the blood vessels and produce the hemorrhage. Although the published record of this case shows the contrary, the jury, said the court in its reported decision, was not asked to determine any fact in connection with the alleged strain, nor was the diseased condition of the deceased's brain submitted to the jury. The issues submitted to the jury simply went to the questions of whether or not the deceased had a hemorrhage at the time and whether, if so, it was an accidental injury and sustained in the course of the employment. All these issues submitted to the jury might have been true and still the insurance company not have been liable. It was shown without controversy, according to the court of civil appeals, that a tumor of the brain, such as, according to the appellate court, the deceased workman had, was likely to rupture at any time and that in the majority of cases such ruptures occur while the patient is lying prone and even when the patient is asleep and exerting no effort whatever. It would seem to follow that such a rupture may occur while the patient is moving around or indulging in the slightest exertion. If in this case the work the deceased workman was doing when the rupture occurred had nothing to do with the rupture of the tumor and if the time had arrived in the course of the development of the tumor for it to rupture and it would have ruptured at that time whether the workman was at work or lying abed, then manifestly the workman's death was caused by the tumor and it was not an accidental injury within the meaning of the Texas workmen's compensation act. According to the court of civil appeals, the widow did not send the jury special issues designed to elicit from it information on the facts pleaded by her but she alleged that the hemorrhage was caused from a strain, and yet, according to the court, the jury was not asked to find whether it was or not.

The court accordingly reversed the judgment in favor of the widow and remanded the cause for a new trial.—*Fidelity & Casualty Co. of New York v. Van Arsdale (Texas)*, 108 S. W. (2d) 550.

Paternity: Evidential Value of Blood Grouping Test Indicating Nonpaternity.—In a bastardy proceedings the court, at the request of the defendant and with the consent of the mother, appointed a physician to make a blood-grouping test of the mother, the child, and the defendant. This physician thereafter testified that the test showed that the defendant was not the father of the child. The trial court, however, entered judgment for the plaintiff. The district court of appeal, second district, division 2, California, reversed the judgment (67 P. [2d] 1059, abstracted, *THE JOURNAL*, Feb. 5, 1938, p. 466), and the case was appealed to the Supreme Court of California.

The principal question before the court was whether the testimony of the physician based on the blood test was conclusive on the issue of paternity. In recent years, the court said, the Landsteiner or Bernstein blood-grouping test has been presented to the courts as evidence in paternity cases. This test is predicated on the medical theory that the red corpuscles in human blood contain two affirmative agglutinating substances and that each individual's blood falls into one of four classes and remains the same through life. According to the mendelian law of inheritance, this blood individuality is a hereditary characteristic which passes from parent to child, and no agglutinating substance can appear in the blood of a child which is not present in the blood of one of its parents. According to the testimony of the physician in this case, the blood of the child "contains the agglutinin B which is not present in the blood of the mother and therefore must have been present in the blood of the father." The blood of the defendant, this physician testified, did not contain this element and therefore he could not be the father of the child. Considered as legal evidence, the court said, the blood test is expert opinion because the conclusions reached by the examining physician are based on medical research and involve questions of chemistry and biology with which a layman is entirely unfamiliar. Whatever claims the medical profession may have for the test, in California "no evidence is by law made conclusive or unanswerable, unless so declared by this code." Section 1978, Code Civ. Proc. And the law makes no distinction whatever between expert testimony and evidence of other character. Although it encourages the demonstration of the truth of the issues before a court by any means which are generally accepted as tending to prove the facts in dispute, "when there is a conflict between scientific testimony and testimony as to the facts, the jury or trial court, must determine the relative weight of the evidence." *Rolland v. Porterfield*, 183 Calif. 466, 191 P. 913. It was the duty of the judge of the trial court to determine the fact of parentage on all the evidence and to resolve the conflict arising from the testimony of the mother and her witnesses on the one hand and the evidence of the defendant, including the blood test, on the other. The finding so made was based on substantial evidence, in the opinion of the Supreme Court, and may not be successfully challenged on appeal.

The judgment for the plaintiff, therefore, was affirmed, after having been modified by striking therefrom the allowance of the attorney's fee.—*Arais v. Kalensnikoff (Calif.)*, 74 P. (2d) 1043.

Radio: Electrical Transcriptions Produced in United States for Broadcast on Foreign Station.—Section 325 (b), Communications Act of 1934, provides:

No person shall be permitted to locate, use, or maintain a radio broadcast studio or other place or apparatus from which or whereby sound waves are converted into electrical energy, or mechanical or physical reproduction of sound waves produced, and caused to be transmitted or delivered to a radio station in a foreign country for the purpose of being broadcast from any radio station there having a power output of sufficient intensity and/or being so located geographically that its emissions may be received consistently in the United States, without first obtaining a permit from the Commission upon proper application therefor.

Norman Baker operated a radio broadcasting station in Mexico, near the international boundary, which could be heard over a great part of the United States. In Laredo, Texas, he and one Rood had offices where talks in English were recorded on disks resembling phonograph records, which were physically sent into Mexico to the radio station and there played so as to reproduce the speeches and to broadcast them over the radio to be heard in the United States. They had no permit so to do.

They were indicted in the United States district court, southern district, Texas, Laredo division, for a violation of the Communications Act. Baker demurred to the indictment, which demurrer was overruled (18 F. Supp. 48; abstracted, *THE JOURNAL*, Oct. 23, 1937, p. 1393). He thereupon appealed to the U. S. circuit court of appeals, fifth district.

Baker contended that a physical phonograph record was not forbidden by the act to be made in the United States and transmitted to Mexico for broadcasting purposes any more than a manuscript would be. The words of the act "sound waves are converted into electrical energy," said the court, evidently refer to transmission of speech or other sound to the foreign radio station by radio, telephone or loudspeaker apparatus. Did the defendants, the court questioned, in making and sending out phonograph records of speeches, maintain a place from which, or use apparatus whereby, "mechanical or physical reproduction of sound waves was produced and caused to be transmitted"? The court thought not. In the case of such a record "mechanical or physical" means, as distinguished from electrical, are used within the meaning of the statute, both to make the indentations which constitute the record and to reproduce the sounds when the record is "played." But the "sound waves" mentioned in the act are the audible movements of the air. They are produced when the words are spoken which are caught by the recording apparatus. They are reproduced when the record is used to make them again, and not before. If these records, the court said, had been played in Texas, a reproduction of the sound waves would have been produced in Texas, and, if transmitted to Mexico for broadcast, a case within the act would have been made. But the defendants had no place and no apparatus in Texas for reproducing the sound waves. They only recorded them. It may be that what was done was intended to be prohibited, the court said, but the intention was not expressed with the clearness that is required in a penal law. The law as written, the court concluded, does not prohibit the recordation of sound waves in the United States and sending the record to Mexico to have the sound waves there reproduced and broadcast.

The judgment of the district court was therefore reversed.—*Baker v. United States*, 93 F. (2d) 332.

Society Proceedings

COMING MEETINGS

- American Association for the Study of Goltz, Washington, D. C., Sept. 12-14. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, White Sulphur Springs, W. Va., Sept. 22-24. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 19-21. Dr. Daniel B. Moss, 547 W. Jackson Blvd., Chicago, Secretary.
- American Congress of Physical Therapy, Chicago, Sept. 12-15. Dr. Richard Kovacs, 1100 Park Ave., New York, Secretary.
- American Hospital Association, Dallas, Texas, Sept. 26-30. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
- American Roentgen Ray Society, Atlantic City, N. J., Sept. 20-23. Dr. Carleton B. Peirce, University Hospital, Ann Arbor, Mich., Secretary.
- Colorado State Medical Society, Estes Park, Sept. 7-10. Mr. Harvey J. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Idaho State Medical Association, Sun Valley, Sept. 6-10. Dr. Harold W. Stone, 105 North Eighth St., Boise, Secretary.
- Michigan State Medical Society, Detroit, Sept. 19-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.
- Mississippi Valley Medical Society, Hannibal, Mo., Sept. 28-30. Dr. Harold Swanberg, 510 Main St., Quincy, Ill., Secretary.
- National Medical Association, Hampton, Va., Aug. 15-19. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
- Nevada State Medical Association, Reno, Sept. 23-24. Dr. Horace J. Brown, 120 N. Virginia St., Reno, Secretary.
- Northern Minnesota Medical Association, Crookston, Aug. 29-30. Dr. J. F. Norman, Crookston, Secretary.
- Oregon State Medical Society, Timberline Lodge, Aug. 24-27. Dr. Morris L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
- Society of American Bacteriologists, San Francisco, Aug. 30-Sept. 1. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.
- Utah State Medical Association, Ogden, Sept. 1-3. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Washington State Medical Association, Bellingham, Aug. 29-31. Dr. V. W. Spickard, 1303 Fourth Ave., Seattle, Secretary.
- Wisconsin State Medical Society of Milwaukee, Sept. 13-16. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.
- Wyoming State Medical Society, Laramie, Aug. 7-9. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

15: 643-780 (June) 1938

- *Clinical Studies of Gitalin and of Digitalis in Treatment of Auricular Fibrillation. H. Levy and E. P. Boas, New York.—p. 643.
Angina Pectoris and Myocardial Infarction as Complications of Myxedema, with Especial Reference to Danger of Treatment with Thyroid Preparations. C. J. Smyth, Ann Arbor, Mich.—p. 652.
Incidence and Type of Heart Disease in San Francisco School Children. J. J. Sampson, A. Christie and J. C. Geiger, San Francisco.—p. 661.
*Sclerosing of Varicose Veins by Ligation and One Massive Injection of Sodium Ricinoleate (Soricin). S. H. Sedwitz and M. H. Steinberg, Youngstown, Ohio.—p. 671.
The Monocardiograph. H. Mann, New York.—p. 681.
Precordial Electrocardiogram in Myocardial Infarction: I. Observations on Cases with Infarction Principally of Anterior Wall of Left Ventricle and Adjacent Septum. C. E. Kossmann and C. E. de la Chapelle, New York.—p. 700.
Accuracy in Diagnosis and Localization of Myocardial Infarction. H. Feli, E. H. Cushing and J. T. Hardesty, Cleveland.—p. 721.

Gitalin and Digitalis in Auricular Fibrillation.—Levy and Boas compared clinically the actions of digitalis leaf and gitalin (a glucosidal fraction of Digitalis purpurea) on thirty-six ambulant patients with auricular fibrillation. Each patient was observed for from six to thirteen months. Gitalin was given first in each case. It was dispensed in tablets of $\frac{1}{80}$ grain (0.0008 Gm.), scored into three equal parts. After the maintenance dose had been ascertained, which usually required several weeks, the gitalin was replaced by a standard preparation of digitalis (dried leaves, each tablet containing $1\frac{1}{2}$ grains, 0.1 Gm.). The dose of digitalis was then adjusted over a period of several weeks until approximately the same cardiac rate was obtained. Gitalin acts like digitalis in slowing the ventricular rate and relieving congestive cardiac failure in patients with auricular fibrillation. Gitalin parallels digitalis in its effect on the RT transition and T waves of the electrocardiogram. Its action persists at least as long as that of digitalis. Rapid administration of gitalin to eight patients produced prompt and effective slowing of ventricular rates and clinical improvement without the development of toxic symptoms. The average daily maintenance dose of gitalin was $\frac{1}{10}$ grain (0.0006 Gm.), of digitalis $2\frac{1}{4}$ grains (0.15 Gm.). Clinically, $\frac{1}{80}$ grain (0.0004 Gm.) of gitalin is equivalent to 1 cat unit of digitalis leaves. Toxic reactions to gitalin are the same as to digitalis. The studies indicate that digitalis can slow ventricular rates in auricular fibrillation in the absence of cardiac failure, which is contrary to the contention that slowing of the ventricular rate in auricular fibrillation is effected by digitalis only in the presence of cardiac failure.

Sclerosing of Varicose Veins with Sodium Ricinoleate.—Sedwitz and Steinberg find sodium ricinoleate efficacious for the obliteration of the saphenous vein following its ligation. The operative technic is similar to that of Faxon and Johnston. The great saphenous vein is ligated and cut near its entrance to the femoral vein and also such branches as present themselves are cut and ligated, but undue dissection is avoided. The branches encountered are the superficial external pudendal, the superficial external epigastric, the superficial circumflex iliac, the internal superficial femoral and the external superficial femoral veins. A syringe filled with the desired amount (from 6 to 30 cc.) of a 2 per cent solution of sodium ricinoleate is fitted with a fairly large bore needle (20 gage) and the needle is inserted distal to the first ligature. The amount injected is dependent on the case. The suture placed around the distal portion of the vein is tied over the needle but is not tightened until after the solution is injected and the needle is withdrawn.

The vein is then ligated and severed between the distal and proximal ligatures. The proximal segment of the vein is doubly ligated as an added safeguard. This method of treatment was employed in thirty-one cases and produced complete obliteration of all varicosities of the great saphenous tree. Cases should be carefully selected, excluding patients who have syphilis, diabetes or extensive infected ulcers or who are extremely obese or senile (past 60 years of age).

American Journal of Diseases of Children, Chicago

55: 1141-1362 (June) 1938

- *Hypochromic Anemia of Infants: Comparison of Efficacy of Ferric and of Ferrous Iron. Ruth Stephenson, Philadelphia.—p. 1141.
Addition of Vegetable Soup and Strained Vegetables to Diet of Artificially Fed Infants. M. W. Poole, B. M. Hamil, T. B. Cooley and I. G. Macy, Detroit.—p. 1158.
Insensible Perspiration in Children. IV. Influence of Salt. G. J. Gihandes and Anne Topper, New York.—p. 1176.
*Zinc Sulfate and Experimental Poliomyelitis: Effect of Nasal Sprays After Intravenous Injections of Virus. J. A. Toomey and W. S. Takacs, Cleveland.—p. 1185.
Hypothyroidism as Cause of Disease of the Hip. B. Benjamin and P. R. Miller, Brooklyn.—p. 1189.
Urinary Output of Vitamin C of Normal and of Sick Children, with Laboratory Test for Its Estimation. T. S. Bumbalo, Buffalo.—p. 1212.
One Hour, Two Dose Dextrose Tolerance Test. M. Cooperstock and Josephine M. Galloway, Marquette, Mich.—p. 1221.
Growth Norms from Birth to the Age of Five Years: Study of Children Reared with Optimal Pediatric and Home Care. J. G. Peatman and R. A. Higgons, Port Chester, N. Y.—p. 1233.
Evidences of Disturbed Prenatal and Neonatal Growth in Bones of Infants Aged One Month. L. W. Sontag, Yellow Springs, Ohio.—p. 1248.
*Protection Phenomenon in Measles: Debré Phenomenon or Aussparphänomen. W. R. Phillips, Elmira, N. Y.—p. 1257.
Poliomyelitis Antiserum Obtained from Horses: II. Neutralizing Effect Against Various Strains of Virus. J. A. Toomey, Cleveland.—p. 1261.
Epidemic Diarrhea of the Newborn: IV. Clinical Considerations. H. Abramson and S. Frant, New York.—p. 1288.

Hypochromic Anemia and Iron.—Stephenson gave 30 grains (2 Gm.) of iron and ammonium citrates daily to thirty-two normal white American-born boys and girls ranging from 3 months to 2 years in age and living under the same conditions in an institution having good pediatric supervision. Thirty-two other infants were each given 6 grains (0.4 Gm.) of ferrous sulfate daily. Therapy was continued for three months, the effects being checked by erythrocyte counts, and estimations of hemoglobin and erythrocyte volume. The ferrous iron proved to be as effective as the ferric. The two groups having reached much the same average hemoglobin level at the end of three months, one group was withdrawn from iron therapy while the other group continued to receive supplemental iron for an additional three months. The trend of the hemoglobin level was downward in those infants whose medication was discontinued, whereas it was upward in those for whom medication was maintained. The study confirms the claim that seemingly normal babies between the ages of 3 months and 2 years have a borderline anemia and demonstrates that their hemoglobin levels can be raised to about 14 Gm. per hundred cubic centimeters by treatment with adequate iron without added copper. Ferrous iron produced a maximal effect with much smaller doses than ferric, and it caused no gastrointestinal disturbance.

Zinc Sulfate and Experimental Poliomyelitis.—Toomey and Takacs found that in monkeys blocking the nasal area with zinc sulfate does not prevent poliomyelitis when the virus is subsequently introduced intravenously. Blocking the nasal area with a 1 per cent solution of zinc sulfate prevents the disease if the virus is introduced intranasally. If an animal protected in the nasal area and subsequently inoculated intravenously with poliomyelitis virus contracts the disease, the virus must come in contact with gray fibers at some place other than the olfactory area. Whether the virus can be isolated from the intestine in animals thus treated will be made the subject of further communications. It seems obvious that there are variabilities in resistance to infection, so that a certain intravenous dose of virus might produce the disease in one animal and not in another. The factor of a monkey's normal resistance is not given its proper due in experiments with intravenous injections of the virus. Since the minimal intra-

venous dose which can produce disease is unknown, it is extremely difficult to compare animal with animal. The fate of the animal depends in some measure on its condition.

Protection Phenomenon in Measles.—Debré and his co-workers observed that if from 1 to 5 cc. of convalescent serum was injected subcutaneously into a patient with measles at the beginning of the period of invasion an area about the site of injection would remain free from rash. A study of this phenomenon was undertaken in fifty patients in the eruptive phase of measles by Phillips in the hope that it might afford a method for determining the relative potency of serum used in the prevention of measles. Samples of convalescent serum were taken from patients nine to twelve days after the rash appeared. To produce the phenomenon, 1 cc. of serum was injected intracutaneously in nearly all cases. More than this amount is not necessary, and less would probably be satisfactory. The phenomenon was not produced in twenty of the fifty patients. Satisfactory inhibition could be obtained in any patient in whom the rash appeared within thirty-six hours after the injections were made. The phenomenon was demonstrated in 115 areas on thirty patients in whom there remained about the site of injection a clearly defined area entirely free from rash throughout the course of the disease. The diameter of this area varied from 2 to 5 cm. in cases in which intracutaneous injections of 1 cc. were used. When duplicate injections were given to the same patient the areas were of the same size. However, the same serum when given to different patients produced areas of different sizes, depending on the time of the injections with reference to the appearance of the rash and perhaps on other factors. When injections of 1 cc. of several dilutions of the same serum were given to a patient, the size of the areas varied with the concentration, that is, with the amount of protective serum introduced. Because of the results obtained with weak dilutions of convalescent serum, blood was collected from five adults who gave a history of measles in childhood. This serum was pooled and various dilutions were made. The phenomenon was produced with this serum in some cases with solutions as weak as 5 per cent. However, it was not as efficient as convalescent serum when equal quantities of solutions of equal concentrations were injected simultaneously into the same patient. Dilutions were made of derivatives of placental extract. These also would produce the phenomenon but correspond in efficiency to serum from immune adults.

American Journal of Ophthalmology, St. Louis

21: 605-722 (June) 1938

- Epithelium in Anterior Chamber of the Eye After Operation and Injury. C. A. Perera, New York.—p. 605.
Exudative Retinitis: Anatomic Findings in Six Early and Two Late Cases. H. D. Lamb, St. Louis.—p. 618.
Staphylococcal Conjunctivitis. C. S. O'Brien and J. H. Allen, Iowa City.—p. 641.
Metastatic Carcinoma of the Iris. T. E. Sanders, St. Louis.—p. 646.
*Effect of Tartar Emetic on the Course of Trachoma: Preliminary Report. L. A. Julianelle, St. Louis; R. Sory, Richmond, Ky.; J. E. Smith, Rolla, Mo., and A. C. Lange, St. Louis.—p. 651.
Etiology of Idiopathic Retinal Detachment. A. E. MacDonald, Toronto.—p. 658.
Induced Hyperpyrexia in Ophthalmology. W. W. Weeks, New York, and S. A. Morris, Marysville, Calif.—p. 664.

Antimony and Potassium Tartrate in Trachoma.

Julianelle and his associates have used antimony and potassium tartrate in the treatment of forty trachomatous patients. The drug was introduced intravenously or in conjunction with local applications. It was used intravenously in a 1 per cent solution, in 5 cc. (0.05 Gm.) or 10 cc. (0.1 Gm.) quantities. When employed locally, it was applied once a day by massaging lightly the everted upper conjunctiva with a thoroughly moistened swab. Three other times during the day it was instilled into the conjunctival sac as drops. The only other procedure adopted was the usual morning irrigation with saline solution and boric acid. Up to the present, sixteen individuals received their full quota (1 Gm.) of antimony and potassium tartrate and all were discharged as improved; the disease, in fact, was arrested. Nine patients left the hospital against advice with insufficient treatment and seven of these showed an appreciable degree of

amelioration. Five persons were given antimony and potassium tartrate as an adjunct to grattage. These showed the most favorable response. In addition, four patients were treated with the drug by local applications only, and in one of these the infection was checked. In three others receiving antimony and potassium tartrate locally following light grattage, all were dismissed as evincing arrest of the disease after two to three weeks of treatment. Six are still being studied. Antimony and potassium tartrate will not supersede the operative procedures devised for correctional purposes, it will not remove scar tissue, it will not restore the cornea to normal when permanent alterations have already occurred, nor will it restore vision lost through cicatrization. But it may arrest the progress of trachoma, particularly corneal invasion, which up to now has been the most refractory and difficult variety to suppress.

American Journal of Physiology, Baltimore

122: 547-816 (June) 1938. Partial Index

- Study on Temperature Necessary to Cause Death in Fatigued Neurons as Compared with Resting Neurons. G. D. Shafer and R. K. Snow, Stanford University, Calif.—p. 551.
Influence of Upright Posture on Metabolic Rate: Note on Standards. Rubye H. Tepper and Frances A. Hellebrandt, Madison, Wis.—p. 563.
Some Observations on Effect of Exercise on Blood, Lymph and Muscle in Its Relation to Muscle Soreness. R. W. Boyle and F. H. Scott, Minneapolis.—p. 569.
Occurrence of Acetylcholine in Gastric Juice. E. Bloch and H. Necheles, Chicago.—p. 631.
Contribution of Auricles to Ventricular Filling in Complete Heart Block. K. Jochim, Chicago.—p. 639.
Effects of Inanition on Temperature Regulation. G. Clark, Chicago.—p. 646.
Effect of Sympathectomy on Gestation and Lactation in the Cat. F. A. Simeone and J. F. Ross, Boston.—p. 659.
Factors Determining Voluntary Ingestion of Water in Normals and in Individuals with Maximal Diabetes Insipidus. C. P. Richter, Baltimore.—p. 668.
Responses of Superior Cervical Ganglion to Single and Repetitive Activation. A. Rosenbluth and F. A. Simeone, Boston.—p. 688.
Relation of Food Intake to Development of Parathyroid Tetany in the Rat. J. H. Jones, Philadelphia.—p. 722.
Nutritional Requirements for Normal Growth and Reproduction in Rats Studied by Self-Selection Method. C. P. Richter, L. E. Holt Jr. and B. Barelaire Jr., Baltimore.—p. 734.
Influence of Nembutal, Pentothal, Seconal, Amytal, Phenobarbital and Chloroform on Blood Sugar Concentration and Carbohydrate Mobilization. M. Caroline Hrubetz and S. N. Blackberg, New York.—p. 759.
Flow of Blood in Carotid Artery of Dog Under Various Circumstances as Determined with Electromagnetic Flowmeter. L. N. Katz and A. Kolin, in collaboration with T. Cohn and K. Jochim, Chicago.—p. 788.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill

39: 849-1002 (June) 1938

- Relation of Presenting Symptoms to Selection of Method of Treatment in Uterine Myoma. H. Schmitz, Chicago.—p. 849.
Irradiation in Treatment of Carcinoma of Uterus, with Special Reference to Corpus Carcinoma. L. E. Phaneuf, Boston.—p. 855.
Correlation of Calculated Tumor Doses and Five Year Survivals in Radiation Therapy of Cancer of Cervix: Review of 136 Cases. E. L. Frazell, New York.—p. 861.
Palliation of Cancer in Gynecology. F. R. Smith, New York.—p. 866.
*Intestinal Injuries After Radium and Roentgen Treatment of Carcinoma of Cervix. J. A. Corscaden, H. H. Kasabach and M. Lenz, New York.—p. 871.
*Ulceration of Small Intestine Following Irradiation of Pelvis: Report of Two Cases. I. A. B. Cathie, Manchester, England.—p. 895.
Roentgenologic Study of Pinea Orientation. III. Comparison of Methods Used in Pinea Orientation. W. W. Fray, Rochester, N. Y.—p. 899.
Incidence of Enlarged Thymus Following Prenatal Use of Iodized Salt. S. W. Donaldson and H. A. Towsley, Ann Arbor, Mich.—p. 908.
Roentgenologic Studies of Large Bowel Infections by Endamoeba Histolytica Before, During and After Treatment. J. C. Bell, Louisville, Ky.—p. 916.
Roentgenologic Diagnosis of Volvulus of Sigmoid Megacolon: Report of Two Cases. M. R. Hall, Toronto.—p. 925.
Roentgen Diagnosis of Hepatodiaphragmatic Interposition of Large Intestine. K. J. Kolju, Tomsk, Siberia, U. S. S. R.—p. 928.
Roentgenologic Aspects of Spina Bifida Occulta. R. J. Dietrich, Fort Scott, Kan.—p. 937.
Traumatic Axial Rotation by Gear Movement of Carpal Scaphoid and Trapezium with Subluxation and Foreshortening of First Metacarpal. A. A. Schmier and M. S. Burman, New York.—p. 945.

Intestinal Injuries Due to Radium and Roentgen Treatment.—Corscaden and his colleagues point out that (1) intestinal obstruction or ulceration of the rectum or sigmoid, in patients who have been irradiated for carcinoma of the uterus, may be the result of radiation injury to the intestine

and not caused by carcinomatous involvement, (2) diarrhea, abdominal distress and nausea occurring during treatment may be symptoms of a definite injury to the intestinal mucosa and not of a general radiation sickness, (3) therapists, by increasing their radiation dosage to a level necessary for efficient cancer therapy, run the risk of causing similar injuries and (4) the importance of the time factor in dosage is emphasized. Radiation injuries were eliminated, without reducing either the total milligram-hours or roentgens administered, by reducing the number of milligrams used in the uterovaginal applications from 175 to 70 and increasing the duration of the application from forty to 100 hours; by reducing the daily roentgen dose from 300 to 400 roentgens to from 100 to 200 roentgens and the size of the field from 20 by 20 cm. to 10 by 15 cm. or less and increasing the duration of the course of treatment from twenty-one to thirty days to forty or more days. Following this change in technic the incidence of intestinal injuries, which had been 8.7 per cent, dropped to zero. Before reduction in daily dosage symptoms related to the lower alimentary system were noted in 139 of 442 cases of carcinoma of the cervix or the corpus treated by radium. The conditions observed at necropsy and operation have ranged from the simplest proctitis through more severe inflammation to ulceration, cicatricial stenosis and perforation.

Ulceration of Small Intestine Following Irradiation.—During the radiation treatment of nearly 400 patients for carcinoma of the cervix uteri, Cathie encountered two patients in whom intractable diarrhea developed and who died, although the roentgen dosage was well within the limits of normal tolerance. Roentgen ulceration was found in the small intestine predominantly, and as high up as the duodenum. The diarrhea occurred during the second week of treatment, when only about 1,500 roentgens had been delivered to the uterus. The generalized ulceration throughout the small intestine almost eliminates the possibility of a direct action of roentgen rays and suggests a systemic effect manifested locally in the intestine. The fact that these two patients died, while the transient diarrhea experienced by many others cleared up spontaneously, indicates either that the diarrhea was sufficiently severe to cause death from dehydration and its sequelae or that some entirely different factor was at work. The emaciated and cachectic state in which both patients died points to dehydration playing some part in the terminal event, in spite of the fact that plenty of fluids were being taken by mouth and parenterally. Pending the production of evidence pointing to a specific etiology, one is forced to the conclusion that certain individuals have a tolerance to roentgen radiation definitely below normal. Anything but the most transient diarrhea during radiation therapy should be regarded with the gravest concern, lest the treatment prove more harmful than the disease.

American Review of Tuberculosis, New York

37: 579-736 (June) 1938

- Studies in Avian Tuberculosis: I. Avian Tubercle Bacilli in Generalized Disease in Swine. A. B. Crawford, Beltsville, Md.—p. 579.
- Id.: II. Comparative Virulence of Avian and Bovine Tubercle Bacilli for Rabbits and Guinea Pigs. A. B. Crawford, Beltsville, Md.—p. 582.
- Id.: III. Sensitization Method of Differentiating Avian from Bovine Infection in Guinea Pigs and Rabbits. A. B. Crawford, Beltsville, Md.—p. 588.
- Id.: IV. Possible Role of the Avian Tubercle Bacillus in Infection in Man. A. B. Crawford, Beltsville, Md.—p. 594.
- Effect of Human Tissue Juices on Tubercle Bacilli. Nell Hirschberg and L. Arnold, Chicago.—p. 598.
- Tuberculosis Control: Present Deficiencies—Future Requirements. R. E. Plunkett, Albany, N. Y.—p. 612.
- Tuberculous Infection in Kingston, Jamaica: Study Based on X-Ray Examinations. C. W. Wells, Kingston, Jamaica, British West Indies, and H. H. Smith.—p. 625.
- Fluoroscopy During Pneumothorax Treatment: Important Aid in Treatment of Difficult Cases. L. Cohen, Eagleville, Pa., and J. V. Blady, Philadelphia.—p. 634.
- Effect of Age on Total Pulmonary Capacity and Its Subdivisions. N. L. Kaltreider, W. W. Fray and H. Van Zile Hyde, Rochester, N. Y.—p. 662.
- Noncavitating Tuberculosis: Analysis of Literature. M. Pinner, Ithaca, N. Y.—p. 690.

Anatomical Record, Philadelphia

71: 125-246 (June) 1938

- Ovoid Bodies from Oviducts of Rabbits. E. V. Enzmann, Schenectady, N. Y.—p. 125.
- Differential Counterstain for Toned Sections of Pyridine Silver Preparations of Peripheral Nerves. J. O. Foley, University, Ala.—p. 133.
- Nerve Supply of Hypophysis of the Cat. G. W. Hair, Buffalo.—p. 141.
- Effects of Estrogenic Substances in Leebistes Reticulatus (Guppy). P. Berkowitz, New York.—p. 161.
- Bilateral Double Infundibulum of Uterine Tube. A. H. Curtis and B. J. Anson, Chicago.—p. 177.
- Congenital Clubhand with Review of Etiology of Condition: Case. G. Forbes, Aberdeen, Scotland.—p. 181.
- Vascular Supply of Human Kidney Based on Dissection and Study of Corrosion Preparations. G. N. Ronstrom, Chicago.—p. 201.
- Some Observations on Graafian Follicles in an Adult Human Ovary. D. S. Pankratz, Memphis, Tenn.—p. 211.
- Microscopic Study of Surface Enamel of Human Teeth. M. J. Eisenberg, Boston.—p. 221.
- Studies of Mechanism of Elimination of Egg Albumin and Its Effect on Elimination of Iron by the Rabbit's Kidney. Charlotte G. Babcock, Chicago.—p. 233.
- Aberrant Ovarian Follicles in Immature Rat. C. E. Lane, Wichita, Kan.—p. 243.

Archives of Internal Medicine, Chicago

61: 847-1016 (June) 1938

- Experimental Renal Insufficiency Produced by Partial Nephrectomy: IX. Blood Plasma Protein Values for Control and Partially Nephrectomized Rats Fed Diets Containing Dried Extracted Beef Muscle. S. Ludewig and A. Chanutin, University, Va.—p. 847.
- Id.: X. Blood Plasma Cholesterol and Phospholipid Phosphorus Values for Control and Partially Nephrectomized Rats Fed Diets Containing Dried Extracted Liver. S. Ludewig and A. Chanutin, University, Va.—p. 854.
- Size and Shape of the Heart in Hyperthyroidism: Teleroentgenographic Study of 200 Cases. H. Gotto, Buenos Aires, Argentina.—p. 860.
- *Exophthalmic Goiter: Relation Between Blood Iodine Level and Duration of Symptoms in 305 Cases. H. J. Perkin and F. H. Lahey, Boston.—p. 875.
- Papilledema Associated with Subarachnoid Hemorrhage: Experimental and Clinical Study. J. Q. Griffith Jr., W. A. Jeffers and W. E. Fry, Philadelphia.—p. 880.
- *Coexistence of Bronchiectasis and Sinusitis. T. W. Walsh, Cleveland, and O. O. Meyer, Madison, Wis.—p. 890.
- Aneurysm of Innominate Artery. H. Parks, Boston.—p. 898.
- Dark Adaptation of the Eye and Vitamin A Storage in Young Adults. Cecilia Schuck and Wilma O. Miller, Lafayette, Ind.—p. 910.
- Bilateral Sporotrichosis of the Breast: Report of Case. J. L. Wade and A. R. K. Matthews, Parkersburg, W. Va.—p. 916.
- Blood: Review of Recent Literature. F. H. Bethell, R. Isaacs, S. M. Goldhamer and C. C. Sturgis, Ann Arbor, Mich.—p. 923.

Exophthalmic Goiter.—Perkin and Lahey compared the relation between the iodine level of the blood with the duration of the symptoms in 305 cases of primary hyperthyroidism (exophthalmic goiter) in which treatment had not been given. The iodine level of the blood was elevated in the majority of cases of hyperthyroidism in which symptoms had been present from one to nine months. The iodine level tended to fall within the normal range when the syndrome of clinical hyperthyroidism had been present for one year or longer. Since the feeding of thyroid to normal persons influences some of the manifestations of hyperthyroidism, it is generally assumed that spontaneous hyperthyroidism is related to an excessive amount of secretion from the thyroid.

Bronchiectasis and Sinusitis.—Walsh and Meyer studied the incidence of sinusitis in 217 patients with bronchiectasis admitted to the State of Wisconsin General Hospital between 1925 and 1936, exclusive of patients with congenital bronchiectasis or with bronchiectasis due to a foreign body. Sinusitis was diagnosed only when gross pus was demonstrable in one or more of the paranasal sinuses. On analysis of the 217 patients, it was found that 145 (66.8 per cent) had associated sinusitis. Various symptoms and illnesses (influenza and pneumonia) preceded the apparent onset of the bronchiectasis. The bronchiectasis involved both lungs in 109 cases, and the bases alone were involved in ninety-nine of these. In the remaining thirty-six cases there was unilateral involvement. There was no predominance of disease of the right lung over that of the left. In forty-two cases there was only mild bronchiectasis, in eighty-one cases moderately advanced disease existed and in twenty-two cases the condition was far advanced. The extent to which the sinus was involved was variable, and no relation between the degree of sinusitis and the degree of bronchiectasis was established. Chronic pansinusitis or gross bilateral infec-

tion of the antrum was found to exist in seventy-eight cases. Most of the seventy-two patients in whom there was no evidence of sinusitis ascribed the onset of bronchiectasis to definite disease or symptoms. Twenty-nine could relate the disease to no cause, nineteen dated their illness from pneumonia and seven had had influenza. Only 14 per cent of the patients failed to give a history which included disease of the respiratory tract at some time in the past. Both lungs were involved in thirty-eight cases of bronchiectasis without sinusitis. In the thirty-four cases of unilateral bronchiectasis without sinusitis the right lung was involved nineteen times and the left lung fifteen times. The degree of bronchiectasis was mild in twenty-three cases, moderately advanced in thirty-five and far advanced in fourteen.

Archives of Neurology and Psychiatry, Chicago

39: 1127-1374 (June) 1938

- Descending Connections from Hypothalamus. H. W. Magoun, S. W. Ranson and A. Hetherington, Chicago.—p. 1127.
Vascular Pattern in Various Lesions of Human Central Nervous System: Studies with Benzidine Stain. A. C. P. Campbell, L. Alexander and T. J. Putnam, Boston.—p. 1150.
Psychiatric Aspects of Artificial Fever Therapy. F. G. Ebaugh, C. H. Barnacle and J. R. Ewalt, Denver.—p. 1203.
Convulsions Produced by Electrical Stimulation of Cerebral Cortex of Unanesthetized Cats. J. W. Ward and S. L. Clark, Nashville, Tenn.—p. 1213.
*Sweat Secretion in Man: I. Sweating Responses in Normal Persons. C. F. List and M. M. Peet, Ann Arbor, Mich.—p. 1228.
Autonomic Innervation of the Face: II. Experimental Study. F. H. Lewy, R. A. Groff and F. C. Grant, Philadelphia.—p. 1238.
Destruction of Hypothalamus in Cats: Effects on Activity of Central Nervous System and Its Reaction to Sodium Amytal. J. H. Masserman, Chicago.—p. 1250.
Primary Ventricular Hemorrhage: Further Contribution to Characteristic Symptom Group. A. Gordon, Philadelphia.—p. 1272.
*Reduction of Increased Intracranial Pressure by Concentrated Solutions of Human Lyophile Serum. J. Hughes, S. Mudd and E. A. Strecker, Philadelphia.—p. 1277.
*Reduction of Cerebrospinal Fluid Pressure by Concentrated Lyophile Serum: Further Observations. D. Wright, D. Bond and J. Hughes, Philadelphia.—p. 1288.
Symptomatic Psychosis in Case of Secondary Anemia. J. Romano and J. W. Evans, Denver.—p. 1294.
Meningeal Tumor in Foramen Magnum. W. J. Gardner, L. J. Karnosh and J. C. Mc Nerney, Cleveland.—p. 1302.
Direct Visualization of Dorsal Nerve Roots of Cauda Equina by Means of Myeloscope. J. L. Pool, New York.—p. 1308.

Sweating in Normal Persons.—List and Peet contend that the sweating test is the method of choice for the analysis of cutaneous sympathetic innervation. Minor's test is described in detail. It depends on the fact that moisture induces a color change in a mixture of iodine and starch. Thermoregulatory sweating (produced by heat, fluids and acetylsalicylic acid) is centrally induced and is generalized. It represents the standard sweating test for any lesion of the nervous system, being particularly suited to a study of disorders of the thoracolumbar portion of the sympathetic nervous system. "Emotional" sweating is also of central origin; it differs from sweating due to heat in that its distribution is localized. The subcutaneous injection of pilocarpine or mecholyl produces perspiration by peripheral action, chiefly on the cholinergic endings of nerves. Gustatory sweating (produced by eating spicy food) is confined to the face. It represents a normal parasympathetic reflex, which may become exaggerated under pathologic conditions. Spinal reflex sweating is localized, perspiration occurring in cases of a transverse lesion of the spinal cord; it is part of the spinal reflex automatism. While sweating is not dependent on the normal circulation of the blood, under physiologic conditions it is associated with peripheral vasodilatation.

Lyophile Serum for High Intracranial Pressures.—Hughes and his associates have shown by experimental and clinical trial that concentrated solutions of human lyophile serum are highly effective in reducing increased intracranial pressure for relatively long periods. A few comparative studies on normal subjects revealed that they are more effective for this purpose than a solution of sucrose. Serum dissolved in a solution of sucrose is difficult to give intravenously because of its viscosity. Therefore it is a better clinical procedure to use concentrated serum dissolved in water. In addition to its ability to reduce intracranial pressure, concentrated lyophile serum has likewise been useful in raising blood pressure in

dogs from a shock to a normal level. The degree of increase in blood pressure is dependent on the amount of serum injected. In a single case of clinical shock resulting from an electric burn, a blood pressure of 68 mm. of mercury was raised to 110 mm. by the injection of 100 cc. of serum of four times normal concentration. As the lyophile serum is merely concentrated pooled human serum, it can be given repeatedly without anaphylactic sensitization. Clinically, 200 cc. of serum of four times normal concentration has been given and it is recommended that this amount should not be exceeded. There is a possible danger of administering serum intravenously to a patient allergic to foods. Concentrated solutions of serum in doses of 4 cc. per kilogram of body weight reduced the cerebrospinal fluid pressure of dogs for from two to eight hours, as indicated by continuous recording of the cisternal pressure. A reduction in pressure was maintained for longer than twenty hours with 8 cc. of serum per kilogram of weight.

Archives of Ophthalmology, Chicago

19: 867-1046 (June) 1938

- Personal Experiences with Intracapsular Cataract Extractions. F. A. Davis, Madison, Wis.—p. 867.
Practice of Dark Adaptation: Review. J. B. Feldman, Philadelphia.—p. 882.
Removal of Cataract by Aspiration. M. J. Blaess, Detroit.—p. 902.
Sir Hans Sloane's Account of an Efficacious Medicine for Soreness of the Eyes: Episode in Eighteenth Century Ophthalmology. B. Chance, Philadelphia.—p. 912.
Encephalitic Optic Neuritis and Atrophy Due to Mumps: Report of Case. C. M. Swab, Omaha.—p. 926.
Simplification of the O'Connor Cinch Operation. M. E. Smukler, Philadelphia.—p. 930.
Packing of Internal Carotid Artery with Muscle in Treatment of Carotid-Cavernous Arteriovenous Aneurysm. E. S. Gurdjian, Detroit.—p. 936.
Magnesium Content of Capsulated Lenses: Review of Its Probable Import; Preliminary Report. I. Givner and Catherine F. Gannon, New York.—p. 941.
Classification of Concomitant Strabismus: Results Secured in Various Types. G. P. Guibor, Chicago.—p. 947.
*Vitamin C and Its Relation to Cataract. Estelle E. Hawley and O. Pearson, Rochester, N. Y.—p. 959.
Caustic Burns of the Eye. W. B. Hubbard, Flint, Mich.—p. 968.
Pathogenesis of Chronic Simple Glaucoma: New Concept of Maintenance of Normal Intra-Ocular Pressure. H. Elwyn, New York.—p. 986.

Vitamin C and Cataract.—Hawley and Pearson investigated the possible relation between the onset of cataract and the body stores of vitamin C (ascorbic acid). The vitamin C content of the blood was determined in forty-three patients, of the urine in forty-eight patients and of the lens in thirty-six patients. Complete studies were made on only sixteen patients. The data show that there is a definitely decreased amount of ascorbic acid in the cataractous lens, from a normal of 30 mg. to 10 mg. per hundred grams of lens tissue, and, while there is a definitely lowered vitamin content in the urine, the values for the blood are in general within a low normal range. No correlation could be found between age and the content of vitamin C in the lens, urine and blood, except the blood-urine relation, which is physiologic, and a possible age-blood correlation. No correlation was found between the type of abnormality in the lens and the level of vitamin C. Dietary histories in general indicate a lowered intake of foods rich in vitamin C in the old age group. The authors conclude from the data presented that the low content of vitamin C in the lens may be a result of cataractous changes rather than the underlying cause and that tissue saturation as measured by the vitamin C content of the urine and blood suggests that it is probably not responsible for the onset of the cataract.

Arkansas Medical Society Journal, Fort Smith

35: 35-52 (July) 1938

- Clinical Significance of Systolic Murmur. C. T. Chamberlain, Fort Smith.—p. 35.
The Male Climacteric. F. W. Ewing, Muskogee, Okla.—p. 38.
Epidemic Cerebrospinal Meningitis. R. M. Jernigan, Jonesboro.—p. 40.

Bulletin of Neurol. Inst. of New York, New York

7: 1-94 (March) 1938

- Hippocampus and Its Relations to Corpus Callosum. F. Tilney, New York.—p. 1.
Relative Refractory Period of Olfaction and of Vision. H. Spatnitz and C. A. Elsberg, New York.—p. 78.

Bulletin New York Academy of Medicine, New York
14: 299-380 (June) 1938

- Transfers of Water and Solutes in the Body. J. P. Peters, New Haven, Conn.—p. 299.
Cancer of Gastrointestinal Canal. C. Eggers, New York.—p. 325.
Clinical Aspects of Hypertension Including Malignant Hypertension. H. O. Mosenthal, New York.—p. 349.
Use of Convalescent Scarlet Fever and Measles Serums in Prophylaxis and Therapy. W. Thalheimer, New York.—p. 361.

Canadian Medical Association Journal, Montreal
38: 529-628 (June) 1938

- Attempt to Inhibit Development of Tar Carcinoma in Mice (Fourth Report): Effects of Vitamins on Tumor Threshold. J. R. Davidson, Winnipeg, Man.—p. 529.
Fracture of Maxillary Zygomatic Compound. J. W. Gerrie, Montreal.—p. 535.
Indications for Operation of Pulmonary Lobectomy. R. M. Janes, Toronto.—p. 538.
Lung Abscess. W. P. Warner, Toronto.—p. 544.
Maternal Mortality in Country Practice. J. H. Duncan, Manyberries, Alta.—p. 550.
Administration of Bismuth. G. H. W. Lucas, Toronto.—p. 553.
Whooping Cough. N. Silverthorne and D. T. Fraser, with technical assistance of G. Hendzen, Toronto.—p. 556.
Paratyphoid B Carrier Successfully Treated with Sulfanilamide. A. T. Bazin, Montreal.—p. 559.
Psychogenic Origin of Some Organic Syndromes. N. Viner, Montreal.—p. 561.
X-Ray Therapy of Acute Inflammatory Diseases. R. W. Boyd, Calgary, Alta.—p. 565.
Eyestrain. J. V. V. Nicholls, Montreal.—p. 569.
Fractured Patella. F. R. Scott, Toronto.—p. 573.
Early Diagnosis of Anencephaly. A. E. Harbeson, Kingston, Ont.—p. 574.

Lung Abscess.—Warner reviews ninety-eight cases of abscess of the lung observed in the Toronto General Hospital during the years 1926-1936 inclusive. Cases in which the abscess was tuberculous or part of a general pyemia were excluded. The etiology of the abscess, the symptoms and signs shown and the effects of various forms of therapy were considered. The possibility of preventing abscesses of the lung was also investigated. The unsatisfactory results of the various forms of treatment emphasize the importance of prophylaxis. Many abscesses of the lung could be prevented if the technic of anesthesia used in certain operations on the upper part of the respiratory tract was changed. Better oral hygiene would also eliminate a fairly large number of cases. Blood borne infection, either with or without large emboli, is an obvious cause of some abscesses. Abscesses of the lung occurring secondary to the extraction of teeth could be completely or almost completely eliminated if teeth were extracted under local anesthesia, or if only a few teeth were removed under general anesthesia, and care taken to prevent the aspiration of foreign matter into the lungs.

Georgia Medical Association Journal, Atlanta
27: 209-252 (June) 1938

- Sulfanilamide in Urology. M. L. Boyd, Atlanta.—p. 209.
Hypolysemic Therapy of Schizophrenic Psychoses: Report of Cases. H. D. Allen Jr., Milledgeville.—p. 213.
Intracutaneous Test for Chancroidal Infection: Comparison of Antigens. R. B. Greenblatt and E. S. Sanderson, Augusta.—p. 218.
Pulmonary Actinomycosis: Report of Case. E. Boling, Atlanta.—p. 219.
Medical and Surgical Reminiscences. W. A. Walker, Cairo.—p. 221.
Toxemias During the Last Trimester of Pregnancy. O. R. Thompson, Macon.—p. 224.
Electrocoagulation of Cancer of Rectum: Report of Cases. M. C. Pruitt, Atlanta.—p. 229.
Oral Sepsis: Its Relation to Abdominal Surgery. J. W. Turner, Atlanta.—p. 230.
Changing Ideas in Treatment of Malignancies. T. Harrold, Macon.—p. 234.
Dangerous Drugs in Daily Use. E. L. Jackson, Emory University.—p. 237.
Modification of the Visscher-Bowman Pregnancy Test: Report of 1,180 Cases. H. C. Frech Jr., Augusta.—p. 240.
Urinary Antisepsis. E. G. Ballenger, Atlanta.—p. 242.

Intracutaneous Test for Chancroid.—In comparing the value of different antigens for the diagnosis of chancroid Greenblatt and Sanderson used a control solution, a bacillary antigen and dmelcos vaccine in nine cases of chancroidal infection. A marked reaction is obtained in the first twenty-four hours with each solution but the negative control reaction subsides in forty eight hours. All tests therefore should be read at the end of forty-eight hours and not earlier. The nine cases of chancroidal infection were also tested with Frci antigen

for venereal lymphogranuloma and two of these were positive. One case was complicated by active venereal granuloma, and Donovan bodies were found in smears and biopsy demonstrated the specific histologic changes. The need for differentiation of the various venereal diseases becomes evident particularly in mixed and atypical cases. Eight of the nine cases of chancroidal infection were also tested with chancroidal bubo pus antigen. A positive response was invoked in four, in three patients a negative response and in one patient positive reactions were obtained with one strain of bubo pus and negative reactions with another strain. The superiority of the bacillary antigen over bubo pus antigen becomes readily evident when it is realized that the cutaneous reactions obtained with the bacillary antigen matched the dmelcos vaccine in every instance. In the preparation (*Am. J. Clin. Path.* 7:193 [March] 1937) of the bacillary vaccine, stock culture of Ducrey bacilli is transferred to the blood on the surface of a veal infusion agar slant. After two or three days of incubation at 37 C. the fluid blood is removed and added to approximately 25 cc. of distilled water and centrifuged at high speed for thirty minutes. The supernatant fluid is removed and 25 cc. of distilled water is again added and centrifugation is repeated. Two such washings will usually remove most of the hemoglobin and serum. The sediment composed of bacteria and cellular debris is suspended in 10 cc. of sterile saline solution and heated for one hour in a water bath at 60 C. Merthiolate 1:10,000 is added as a preservative. A reaction is considered positive if after the intracutaneous injection of 0.1 cc. of antigen an area of induration measuring more than 0.7 cm. and surrounded by a zone of erythema measuring more than 1.4 cm. is present at the end of forty-eight hours.

Journal of Infectious Diseases, Chicago

62: 225-350 (May-June) 1938

- Pollution Flow from a Pit Latrine When Permeable Soils of Considerable Depth Exist Below the Pit. Elfreda Larson Caldwell, Andalusia, Ala.—p. 225.
Direct Measurement of Rate of Ground Water Flow in Pollution Studies. Elfreda Larson Caldwell and L. W. Parr, Andalusia, Ala.—p. 239.
Studies of Subsoil Pollution in Relation to Possible Contamination of Ground Water from Human Excretes Deposited in Experimental Latrines. Elfreda Larson Caldwell, Andalusia, Ala.—p. 272.
Experimental Investigations in Hemorrhagic Encephalitis. A. B. Baker and C. W. Buggs, Minneapolis.—p. 293.
Effect of Various Blood Mediums on Growth Characteristics of Haemophilus Pertussis. J. A. Toomey and W. S. Takacs, Cleveland.—p. 297.
Study of Organisms Recovered from Filtrates of Cultures of Hemolytic Streptococci. Edith E. Nicholls, New York.—p. 300.
Influence of Temperature on Proliferation of Infectious Fibroma and Infectious Myxoma Viruses in Vivo. R. L. Thompson, Cleveland.—p. 307.
Effect of Washing and Physical Agents on Haemophilus Pertussis. J. A. Toomey and W. S. Takacs, Cleveland.—p. 313.
Studies on Bacteriology and Immunology of Chronic Staphylococcal Osteomyelitis: I. Cultures Involved, Antihemolysin in the Patient's Serum and Local Inflammatory Reaction. Katherine E. Hite, S. W. Banks and G. M. Dack, Chicago.—p. 317.
Decomposition of Ascorbic Acid by Certain Bacteria: Studies in Bacterial Metabolism: CIX. A. I. Kendall and H. Chinn, Chicago.—p. 330.
The In Vitro Action of Immune Rat Serum on Nematode, Nippostrongylus Muris. M. P. Sarles, Chicago.—p. 337.

Bacteriology and Immunology of Osteomyelitis.—Hite and her co-workers studied the host-parasite relationships in chronic osteomyelitis. Osteomyelitis strains of staphylococci did not differ from the pathogenic strains from other sources in the fermentation of mannite and lactose and the liquefaction of gelatin. They were less active in the production of coagulase (39.8 per cent of osteomyelitis strains positive). The inability of many strains to produce coagulase should not exclude them from being classified with the pathogenic staphylococci. The mean value for toxin production by osteomyelitis strains was found to be somewhat less than that for the other cultures. Osteomyelitis strains fell into two groups, one of which produced little or no toxin, while toxin of the other group was of a potency comparable to that produced by the control group. The ability of a strain to produce toxin bears little relationship to its source, and it appears that osteomyelitis cultures do not differ in this respect from strains isolated from other disease processes. The authors' experiments on the relation of toxicity to disease production agree with those of Forssman and Smith

that antitoxic immunity of the animal bears no relationship to the development of localized lesions, and with Menkin and Walston that coagulase is inactive in the local "walling off" or fixation of the inflammatory process. Their results indicate that some property of staphylococci other than toxicity or coagulase production was important in the production of localized lesions. The antihemolysin titer of the serum of twenty-three patients was followed for periods of from three months to over a year and determinations were made on single samples from fourteen additional patients. A positive correlation was found in all cases between the presence of active disease and the elevated antihemolysin. The titer remained elevated so long as progressive involvement continued and rapidly became reduced during periods of quiescence and drainage. The low antihemolysin titer of the patient's serum during the chronic stages of osteomyelitis suggested that the chronic inflammation of the wall of the sinus exerted an effect on the exchange of materials between the sinus and the circulation and that such a condition would account, at least in part, for the general responses of the patient to the infection. This possibility was tested in patients by introducing concentrated typhoid vaccine into draining sinuses and testing the serum for the presence of agglutinins against *Bacterium typhosum*. Four patients have been tested so far, and no increase in typhoid agglutinins occurred.

Journal of Nutrition, Philadelphia

15: 525-634 (June) 1938

- Antirachitic Activity of Various Forms of Vitamin D in the Chick. D. G. Remp and I. H. Marshall, Albany, N. Y.—p. 525.
Effect of Enhanced Iodine Intake on Growth and on Thyroid Glands of Normal and Goitrous Rats. R. E. Remington and J. W. Remington, Charleston, S. C.—p. 539.
Role of Vitamin D in Control of Dental Caries in Children. E. C. McBeath and T. F. Zucker, New York.—p. 547.
Specific Dynamic Effects of Proteins When Added in Different Amounts to a Maintenance Ration. M. Kriss, State College, Pa.—p. 565.
*Effect of Forced Air Currents and Clothing on Radiation and Convection. J. D. Hardy, A. T. Milhorat and E. F. Du Bois, with technical assistance of F. G. Soderstrom, New York.—p. 583.
*Skin and Body Temperatures of Normal Individuals Under Cold Conditions. H. Freeman and R. F. Nickerson, Worcester, Mass.—p. 597.
Influence of Diet and Energy Intake on Acute Vitamin B₁ Deficiency in the Rat. G. A. Schrader and C. O. Prickett, Auburn, Ala.—p. 607.
Quantitative Requirement of the Growing Chick for Manganese. W. M. Insko Jr., M. Lyons and J. H. Martin, Lexington, Ky.—p. 621.

Effect of Air on Radiation.—According to Hardy and his associates, seven observations were made on the effect of an electric fan blowing over nude men in a calorimeter. With air cooler than 87.8 F. there was little change in vaporization and radiation but a marked rise in convection which accounted for as much as from 33 to 40 per cent of the total elimination of heat. In warmer air convection rose less markedly and in air above 93.2 F. did not increase at all. With air as warm as the skin and moderate humidity there is no physical benefit to be derived from a fan. At lower temperatures the fan caused an increase in convection which permitted the body to lose more heat through a cool skin than it had lost in quiet air with a warmer skin. Observations made while the subject was clothed were compared with observations at the same temperature when nude. The surface of the clothes was 1 or 2 degrees C. cooler than the skin, but the radiating surface was so much larger that the total radiation was about the same. Vaporization was not changed significantly. The temperature gradient shows a slight drop between the underclothing and the outer suit, and a still greater drop between the surface of the suit and the walls of the room of the calorimeter.

Skin and Body Temperatures and Cold Environment.—Freeman and Nickerson observed the cutaneous and rectal temperatures of ten normal subjects exposed to an environmental temperature of 68 F. for two hours and an equal number of subjects at a temperature of 59 F. At both environmental temperatures the cutaneous temperatures fall markedly, more rapidly in the first hour and more precipitously at 59 F. than at 68 F. The fall is least on the forehead and greatest on the extremities. The rectal temperature shows little change for an hour but after that begins to fall, more rapidly, however, at 68 F. than at 59 F., the mean level being higher at the latter temperature. There is a significant individual varia-

tion as to the temperature levels. The difference is greatest on the extremities. The rate at which the cutaneous temperature falls is independent of the initial level of the rectal temperature and is only slightly influenced by the initial cutaneous temperature. The average levels of cutaneous and rectal temperatures are slightly related to each other but in a negative direction.

Journal of Pediatrics, St. Louis

12: 701-862 (June) 1938

- Vitamin A Research and Its Clinical Applications in Pediatrics. A. M. Yudkin, New Haven, Conn.—p. 701.
Comparative Values of Various Carbohydrates Used in Infant Feeding. F. W. Schlutz, E. M. Knott, J. L. Gedgoud and I. Loewenstamm, Chicago.—p. 716.
*Sensitivity to Cow's Milk in Infantile Eczema. L. W. Hill, Boston.—p. 725.
Allergy in Childhood: I. Modes of Its Acquisition. B. Ratner, New York.—p. 730.
Id.: II. Prophylaxis. B. Ratner, New York.—p. 737.
Treatment of Paradoxical Incontinence of Urine Associated with Spina Bifida. C. D. Creevy, Minneapolis.—p. 747.
Enuresis in Children. H. Bakwin, New York.—p. 757.
Foreign Bodies in Urogenital Tract of Children. P. Rosenblum and A. E. Jones, Chicago.—p. 769.
Orthostatic Hypotension: Report of Two Cases in Which the Patients Were Children. D. L. Gillespie, Butte, Mont., and N. W. Barker, Rochester, Minn.—p. 772.
Endemic Typhus Fever: Report of Case in a Female Child, Age 11 Years. H. A. Reisman and J. Sabloff, Jamaica, N. Y.—p. 778.
Sedimentation Time and Other Blood Factors in the Newborn Infant. S. Hurwitz, A. S. Mulay and Dorothy Scott Lazarus, San Francisco.—p. 785.
*Comparative Value of Cod Liver Oil and Emulsion of Percomorph Liver Oil in Prevention of Rickets. Margaret R. Reynolds, Jackson Heights, N. Y.—p. 789.
The Conduct of a Pediatric Prophylaxis Clinic: Modifications in Procedures Designed to Reduce Anxiety of Children. Mabel Huschka and O. S. Ogden, New York.—p. 794.
Candy-Coated Tongue Depressor. F. Hall, New Rochelle, N. Y.—p. 801.

Sensitivity to Milk in Infantile Eczema.—Hill points out that, of 126 cases of infantile eczema, 104 began before the age of 6 months and fifty-two before the age of 3 months. At the time of onset most of the infants were receiving cow's milk, orange juice and fish oil. Milk as a possible causative factor deserves serious consideration. Three measures have commonly been used when sensitivity to cow's milk exists: use of heated milk, evaporated milk (which has been heated to 116 C. for fifteen minutes) or a proprietary preparation which has probably been heated hotter and longer. All available evidence indicates that casein is not rendered any less allergenic by heating. Therefore if sensitivity to casein exists there is no reason to believe that heated milk will do any good. Casein sensitivity is generally thought to be uncommon. However, from unfinished work now in progress it appears that sensitivity to casein may be much more common than has been supposed. The allergenic power of lactalbumin is somewhat reduced, but by no means obliterated, by heating. There is therefore some reason for feeding heated milk if there is sensitivity to lactalbumin alone. The author has recently fed nineteen eczematous infants less than 1 year of age who gave negative scratch tests but positive intracutaneous tests to milk on a milk-free food (sobee). In fourteen of these, improvement or apparent cure was so striking that there seemed no question that sensitivity to cow's milk was of primary etiologic importance, in spite of the negative scratch tests. The failures were for the most part in the most severe cases, with the picture of erythroderma.

Cod Liver Oil and Percomorph Liver Oil in Rickets.—Reynolds found that a malt emulsion of highly potent (percomorph) fish liver oil fed to sixty-six infants at a level of 450 U. S. P. units daily was as effective in the prevention of rickets as 450 U. S. P. units of cod liver oil fed to a group of sixty infants. These administrations completely prevented rickets in 96 per cent of the 126 infants (aged from 1 day to 10 months) followed through the months of October to June. When the 450 U. S. P. unit level of vitamin D in the form of the emulsion was dispersed in milk or orange juice, it was found to be just as effective as when given full strength. The malt emulsion on the basis of palatability, ease of administration and ready digestibility was judged to be superior to cod liver oil as an antirachitic supplement.

Journal of Urology, Baltimore

39: 733-824 (June) 1938

- Spontaneous Subcapsular Renal Hematoma. W. M. Coppridge, Durham, N. C.—p. 733.
Distribution of Ureteral Pain. N. F. Ockerblad and H. E. Carlson, Lawrence-Kansas City, Kan.—p. 745.
Primary Malignant Tumor of the Epididymis. J. A. Lazarus, New York.—p. 751.
Surgical Treatment of Urogenital Tuberculosis. G. J. Thomas, T. J. Kinsella, C. K. Petter and T. L. Stebbins, Minneapolis.—p. 766.
Spermatocele, Including Its X-Ray Treatment. C. Huggins and W. J. Noonan, Chicago.—p. 784.
Neurologic Studies by Means of the Microcystometer and the Sphincterometer: Studies in Bladder Function: VII. Preliminary Report. I. Simons, New York.—p. 791.
A New Cystometer, Incorporating the Advantages of a Water Manometer and Continuous Tracing. H. E. Landes and H. C. Voris, Chicago.—p. 813.
Anomalous Urinary Tract in One Day Old Male Infant. E. Hess, Erie, Pa.—p. 817.

Kentucky Medical Journal, Bowling Green

36: 209-252 (June) 1938

- Some Observations on Tuberculosis Problem in Kentucky. J. B. Floyd, Richmond.—p. 212.
Diphtheria. L. Palmer, Louisville.—p. 218.
Dementia Praecox. W. R. Summers, Hopkinsville.—p. 222.
Acute Obstruction of Small Intestine, General Considerations. C. G. McLean, Lexington.—p. 226.
Treatment of Pain in Carcinoma of the Cervix. R. F. Vogt, Louisville.—p. 229.
Sterility in the Female. L. A. Gray, Louisville.—p. 231.
The Multiple Hernias. W. M. McClarin, Louisville.—p. 235.
Results of Taxis in Strangulated Hernia. I. Abell Jr., Louisville.—p. 236.
The Present Status of Collapse Therapy. L. W. Nehil, Louisville.—p. 242.
Review of Recent Literature on Tumors of the Testicle. N. L. Bosworth, Lexington.—p. 248.

Michigan State Medical Society Journal, Lansing

37: 481-576 (June) 1938

- Contrast Between Treatment of Heart Failure and Peripheral Circulatory Failure. A. L. Barach, New York.—p. 497.
*Pulmonary Complications in Adult Medical and Surgical Patients. E. E. Irons and C. W. Apfelbach, Chicago.—p. 501.
Spontaneous Rupture of Uterus Following Previous Cesarean Section: Case Report and Discussion. J. G. Slevin, Detroit.—p. 506.
Osteoporosis Due to Carbohydrate and Calcium Metabolism Disturbances: Pain, Headache and Weakness Associated with Osteoporosis. R. C. Moehlig, Detroit.—p. 509.
Treatment of Wounds of the Hand. J. A. Spencer, Flint.—p. 515.
*Glucose Tolerance and Phosphorus Curves in Patients with Dermatoses. F. R. Menagh, D. P. Foster and C. E. Reyner, Detroit.—p. 521.
Mental Hygiene and Epilepsy. R. L. Dixon, Wahjamega.—p. 526.
Continued Fever: Meningococcemia. F. H. Top and D. C. Young, Detroit.—p. 528.
Precancerous Lesions of the Skin and Mucous Membrane. E. A. Hand, Saginaw.—p. 530.
Some Uncommon Skin Tumors. H. Pinkus, Eloise.—p. 533.
Dystonia of Vegetative Nervous System: Value of Specific Sedation in Treatment. G. W. Slagle, Battle Creek.—p. 537.

Pulmonary Complications in Adult Patients.—Irons and Apfelbach studied 845 consecutive necropsies performed from 1929 to 1936 inclusive. Of 662 necropsies showing significant pulmonary disease, bronchopneumonia of the upper part of the respiratory tract, as indicated by pathologic changes in the lungs and in cultures, was found in 122 instances. In the remaining 540 cases, pulmonary disease other than bronchopneumonia of the ordinary type was present. The principal complications found were edema and passive congestion (110), pulmonary infarction and embolism (eighty-eight), septic infarcts (forty-three), atelectasis from compression of the lung by fluid or by abdominal distention (twenty-eight), bronchopneumonia of the respiratory type (122) and aspiration bronchopneumonia from aspiration of the contents of the stomach (171). Other pulmonary lesions occurring less frequently included thrombosis of the pulmonary artery, lobar pneumonia either primary or secondary, pulmonary tuberculosis and primary or metastatic tumors of the lung. The distribution of the principal complications was fairly uniform in the several years, and it is believed that a more extensive survey now in progress will not greatly modify the relative incidence of the figures.

Dextrose Tolerance and Phosphorus in Dermatoses.—Menagh and his associates selected for their study 150 consecutive patients with various dermatoses in whom dextrose

tolerance tests had been performed. They tried to determine whether the dextrose tolerance test is disturbed in this group of patients and in case a disturbance is present whether a successful therapeutic regimen can be based on this fact. Blood sugar determinations were performed by the method of Folin and Wu, and the inorganic blood phosphates were determined by the method of Benedict and Theis. It is shown that there is a significant decrease in the dextrose tolerance test in a considerable majority of the patients studied. The determination of the basal metabolic rate in addition to a dextrose tolerance test is a useful method of investigating these changes. Treatment with insulin and thyroid extract based on these observations has proved to be of distinct value. The fasting blood sugar is of little value in these studies. Only one patient in the series had a fasting blood sugar of more than 100 mg. and that was only 110 mg. The therapeutic results shown in the study support the thesis that the moderate decrease in dextrose tolerance demonstrated in these patients is an actual disturbance in the metabolism of dextrose and that it is of clinical importance. Of the patients with acne vulgaris 70 per cent showed a decreased tolerance for dextrose and the other dermatoses gave comparable results. Better therapeutic results were obtained in the group given insulin and thyroid, when indicated, than in a control group in which these were not used.

Public Health Reports, Washington, D. C.

53: 831-894 (May 27) 1938

- Studies on Blood Coagulation: I. General Considerations. L. Detre.—p. 831.
Age of Delinquents in Relationship to Rorschach Test Scores. M. J. Pescor.—p. 852.

53: 895-934 (June 3) 1938

- Lighting for Low Cost Housing. J. E. Ives.—p. 895.
Sanitation of Isolated Dwellings. H. A. Whitaker.—p. 902.
Further Study of Purification and Tannic Acid Precipitation of Scarlet Fever Toxin. M. V. Veldee.—p. 909.
Number and Length of Nursing Visits as Indices of Nursing Service. Helen Bean.—p. 913.

West Virginia Medical Journal, Charleston

34: 289-336 (July) 1938

- *Toxic Properties of Carbon Dioxide. R. M. Waters, Madison, Wis.—p. 289.
Gonorrheal Peritonitis. O. G. King, Bluefield.—p. 292.
Management of Handicapped Goiter Patient. R. K. Buford, Charleston.—p. 295.
Ophthalmic Pointers in General Physical Examination. T. M. Goodwin, Elkins.—p. 299.
Pelvic Inflammatory Disease. R. Kessel, Charleston.—p. 302.
The Management of the Heart in Pulmonary Tuberculosis. E. Podolsky, Brooklyn.—p. 309.
The Doctor Looks at Socialized Medicine. E. L. Shore, Atlantic City, N. J.—p. 311.

Toxicity of Carbon Dioxide.—Waters states that pre-anesthetic medication prevents hyperventilation either before or during anesthesia. Rebreathing of anesthetic mixtures has been reduced to a minimum and carbon dioxide is added infrequently to the anesthetic mask. The intermittent administration of mixtures of carbon dioxide and oxygen, either at the end of an operation or in the ward following recovery, has resulted in a greater incidence of atelectasis or massive collapse and pneumonia than is now found since such treatment has been discontinued. Voluntary deep breathing of the patient under the direction of the nurse is depended on for lung exercise when possible. Unconscious patients are still subjected to periodic carbon dioxide hyperpnea with atmospheric air as a vehicle, not oxygen. Thus the remote alveolar spaces, which become inactive after hyperpnea, are not left filled with a rapidly absorbed gas, such as oxygen. Whenever carbon dioxide is administered to a patient, whether by means of rebreathing or from a compressed supply, the necessity for careful individualization of dosage must not be overlooked. Whenever hyperpnea fails to occur with inhalation of excess carbon dioxide, danger is near. If irregular or depressed or gasping breathing accompanies such therapy, it should be discontinued. Muscular twitching of the small muscles of the face often precedes a more generalized convulsion, which can be prevented by eliminating carbon dioxide rather than by administering it.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

11: 345-424 (June) 1938

- Silicosis in Pottery Industry. J. F. Bromley.—p. 345.
 Silicosis in Pottery Workers. R. A. K. Harper.—p. 354.
 Silicosis in Grinders. J. L. A. Groat.—p. 366.
 Asbestosis. J. V. Sparks.—p. 371.
 *Occupational Diseases of Lungs in Agricultural Workers. R. Fawcitt.—p. 378.
 Radiologic Demonstration of Pathologic Changes Induced by Certain Industrial Processes. J. F. Brailsford.—p. 393.
 Tests of Respiratory Efficiency and Their Correlation with Radiologic Appearances in Lungs. Esther M. Killick.—p. 401.
 Radiographic Studies of Excretion of Ducts from Lungs. A. E. Barclay, K. J. Franklin and R. G. Macbeth.—p. 405.
 Factors Which Determine the Diagnosis of Silicosis. C. L. Sutherland.—p. 414.

Pulmonary Diseases in Agricultural Workers.—Fawcitt states that agricultural workers are liable to infection by organic matter, the micro fungi, bacteria and parasites which exist in vegetable matter and excreta of the animals among which they work. Various types of mycotic infection of the lungs are described and the x-ray appearances illustrated. Attention is drawn to the importance of the recognition of the early stages of these conditions because of the possibility of far reaching effects of the pathogenic micro fungi. The author believes that the common micro fungi, though usually innocuous, may become pathogenic under certain conditions and that the incidence of harmful infection is more common and widespread than is generally realized. These occupational diseases of the lung among agricultural workers are rare and seldom reach the roentgen department. The interpretation of the films is difficult. Roentgenologically there is an increase in the hilar shadows, and the lungs show a "woolly" appearance in the region of the hilus and midlung fields, spreading down toward the bases. Cavitation may be seen. The symptoms vary to some extent according to the causative fungus. The patients suffer from gradually increasing dyspnea, which goes on for a month or more until finally it is acute and they cannot walk up the slightest incline. The patients cough and sometimes bring up scanty, frothy sputum. They show a slight fever, and the sedimentation rate of the blood is rather greater than normal. The sputum contains fungi but no tubercle bacilli. The clinical signs are those of a fine bronchial catarrh or asthma. Patches of dulness and crepitations, rales, rhonchi and increased vocal resonance may be found. In more severe cases there is extreme shortness of breath, and there may also be mucopurulent sputum, hemoptysis, emaciation and slight fever. Sometimes the sputum smells like brewers' yeast. Except in chronic cases the expansion of the chest is normal. The essential feature is the extreme dyspnea.

British Medical Journal, London

1: 1143-1192 (May 28) 1938

- Some Recent Advances in Medical Diagnosis and Treatment. A. H. Douthwaite.—p. 1143.
 *Serologic Examination of Hemolytic Streptococci from Acute Rheumatic and Control Groups. C. A. Green.—p. 1147.
 Acute Epidural Abscess. W. R. D. Mitchell.—p. 1149.
 *Sulfonamide Chemotherapy in Genito-Urinary (Nongonococcal) Infections. A. J. Cokkinis.—p. 1151.
 New Contrast Stain for Gonococci and Meningococci in Smears. B. R. Sandiford.—p. 1155.

Hemolytic Streptococci in Acute Rheumatism.—An incidence of 78 per cent of sore throats was observed by Green in 200 rheumatic patients. In 200 unselected nonrheumatic patients the incidence was 46 per cent. Hemolytic streptococci were recovered from 58 per cent of all rheumatic subjects on admission to the hospital. Faucial infections with this organism, as in scarlet fever, are followed by the carrier condition for indefinite periods. Of the rheumatic patients with subjective symptoms of preceding infection 60 per cent yielded hemolytic streptococci, whereas in the symptomless the carrier rate was 44 per cent. In the control group, despite the prevalence of apparent recent infection, only 30 per cent yielded hemolytic streptococci, and approximately the same proportion of carriers was found in those with and without a recent history. This

would suggest that in the control group many of the infections of the throat were due to organisms other than hemolytic streptococci or that the carrier condition after faucial infection was less persistent than in rheumatic subjects. Of the strains of hemolytic streptococci from throat swabs of rheumatic subjects 87 per cent were serologically classified in the Lancefield group A; 42 per cent of the strains from the nonrheumatic controls were of this group.

Sulfonamide in Genito-Urinary Infections.—Cokkinis employed various sulfonamide and aniline compounds in the treatment of thirty cases of nongonococcal genital infections, twelve cases of "primary" urinary infections and fifteen cases of "secondary" urinary infections. The first group shows four cases of epididymitis with one failure and twenty-six cases of urethritis with three failures. There was only one complete failure in the second group of twelve cases (nine of acute or subacute pyelitis and three of acute cystitis), the chemotherapy being abandoned because of toxic effects. The average concentration of detectable sulfanilamide in the urine of these patients (on from 2 to 3 Gm. daily) was about 1:3,500. The third group ("secondary" urinary infections) consisted of nine cases of senile enlargement of the prostate with urinary infection, four cases of urethral stricture with secondary cystitis, one case of epididymitis with pyelocystitis and one case of vesicocolic fistula. The four complete failures in this group show a strange similarity. Two are cases of senile prostatism and two are cases of severe stricture, but chronic retention of urine and an alkaline cystitis with heavy mixed infection occurred in all. Whether their failure to respond to chemotherapy is due to the presence of sulfonamide-resistant organisms in the alkaline urine—for example, staphylococci or *Bacillus proteus*—or to a submucous fibrosis of the chronically inflamed and thickened bladder can only be a matter for speculation. The last case in this group is also a chemotherapeutic failure; investigation, which included cystoscopy and laparotomy, revealed a carcinoma of the pelvic colon, with a small vesicocolic fistula.

Journal of Mental Science, London

84: 255-450 (March) 1938

- Impedance Angle and Its Relation to Thyroid Treatment in Mental Disorder. W. Sargent, R. Fraser and M. A. B. Brazier.—p. 255.
 Some Observations on the Theory of Perception. S. Sharman.—p. 273.
 Imagery and Its Relations to Schizophrenic Symptoms. L. H. Cohen.—p. 284.
 Disturbances of Consciousness After Head Injuries: Observations on Boxers. E. Guttman and C. E. Winterstein.—p. 347.
 *Studies in Hay Fever Patients (Allergic Personality). E. Wittkower.—p. 352.
 Experiments on Origin of Wassermann Reaction in Cerebrospinal Fluid. A. Beck.—p. 370.
 Takata Reaction on Cerebrospinal Fluid in Syphilis of Nervous System. H. H. Fleischhacker.—p. 378.
 The Boarding Out of Mental Patients in the Scottish Highlands. J. A. W. Stone and A. E. Evans.—p. 381.

Allergic Personality of Hay Fever Patients.—Wittkower made a study of the mental makeup of fifty patients with hay fever. The observations are compared with a control group of fifty subjects. Allergic conditions in other members of the family were present in eighteen, absent in twenty and undetermined in three of the fifty patients with hay fever. A comparison of the social level of the two groups of persons shows that the patients with hay fever grew up in a slightly higher cultural milieu than the control group. Nine "only" children are found in the hay fever group, as compared with one "only" child in the control group. No other deviations are noticeable. In general the size of the family in the hay fever group is smaller than that in the control group. Owing to the contact with many brothers and sisters, children in large families are said to be less prone to disorders of behavior than in small ones. The number of "delicate children" is surprisingly high among the patients with hay fever, suggesting that they more than the subjects of the control group were subject to overprotection in their early childhood. In contrast to the control group, a large number of the patients with hay fever regarded their childhood memories as unpleasant. The data in general seem to indicate that the early development of hay fever in these patients was influenced by various adverse circumstances, which were liable to render their adjustment to life more difficult than that of the control group. If the author's data obtained in the

patients with hay fever is linked with those of others in allied syndromes (urticaria, asthma and migraine) a surprising uniformity is noticeable. The predominating personality features prevailing among the patients with hay fever were self absorption, dreaminess and overweening ambition. It is conceivable that with increased vegetative excitability previously subliminal amounts of allergen may become pathogenic, the absorption of allergens may be facilitated and "H substance" may be locally released. Severe allergic diseases acquired early in life—such as eczema, prurigo and asthma—are apt to lead to changes in character developing as a secondary reaction to their experience.

Journal of Physiology, London

92: 361-472 (May 14) 1938

- Experimental Traumatic Shock. J. R. Bell, A. M. Clark and D. P. Cuthbertson.—p. 361.
Quantitative Data on Inhibition of Estrus by Testosterone, Progesterone and Certain Other Compounds. J. M. Robson.—p. 371.
Some Factors Influencing Venous Pressure in Man. J. Doupe, R. A. Krynanow and S. R. Snodgrass.—p. 383.
Antagonism Between Progesterone and Synthetic Estrogenic Substance, Triphenyl Ethylene. J. M. Robson.—p. 401.
Effect of Adaptation on Differential Brightness Discrimination. K. J. W. Craik.—p. 406.
Action of Hordenine Compounds on the Central Nervous System. A. Schweitzer and S. Wright.—p. 422.
Respiration and Metabolism of Submaxillary Gland Tissue of the Cat. W. Deutsch and H. S. Raper.—p. 439.
Effect of Large Doses of Insulin on Fetal Sheep and Goat. R. Passmore and H. Schlossmann.—p. 459.
Coughing Studied by Means of X-Ray Cinematography. K. J. Franklin and R. Janker.—p. 467.

Journal of Tropical Medicine and Hygiene, London

41: 177-196 (June 1) 1938

- Maurizio Ascoli's Treatment in the Practice of a Malaria Control Station. A. Milletari.—p. 177.
Mollusks Which Serve as Hosts for Schistosomes in Mozambique. F. G. Cawston.—p. 181.
Consideration of Classification of Trypanosomes, with Special Reference to Classification of Jaco. J. C. Swartzwelder.—p. 182.
Diseases of the Skin in Negroes. L. J. A. Lowenthal.—p. 187.

Lancet, London

1: 1147-1200 (May 21) 1938

- Biologic Thought and Chemical Thought: Plea for Unification. F. G. Hopkins.—p. 1147.
Clinical Features of Central Pain. G. Riddoch.—p. 1150.
Photodynamic Action of Carcinogenic Agents. J. C. Mottram and I. Doniach.—p. 1156.
*Simulation of "Acute Abdomen" in Carbon Tetrachloride Poisoning. W. H. Graham.—p. 1159.
Hemorrhage and Intestinal Obstruction Due to a Meckel's Diverticulum. B. H. Page.—p. 1160.
Effect of Testosterone Propionate on Testicular Function in Monkeys. S. Zuckerman.—p. 1162.
Simple Electrical Device for Taking the Fourth Electrocardiographic Lead. A. Schott.—p. 1163.

Carbon Tetrachloride Poisoning.—Two cases of carbon tetrachloride poisoning with signs and symptoms simulating acute conditions within the abdomen have been encountered by Graham during the last two years. In the majority of the cases reported the gastrointestinal system was affected. Many patients complained of a burning sensation in the epigastrium, and nausea or diarrhea, with vomiting. In more severe cases abdominal colic and hematemesis were observed. Jaundice and hepatic enlargement were conspicuous features in several cases but were absent in others. Necropsies in several fatal cases showed necrosis of the liver cells, as in acute yellow atrophy of the liver or delayed chloroform poisoning. Nephritis of varying degree was common and sometimes was so severe as to produce a transitory anuria over several days; at necropsy, desquamation and necrosis of the epithelium of the tubules were present. Symptoms of irritation of the respiratory tract were often noticed. Postmortem examination revealed the alveoli filled with fresh blood. Some cases showed prostration with a rapid and thin pulse, pallor, sweating and slight cyanosis. In another group of patients, nervous phenomena were prominent. Some showed nervous irritability, restlessness and headache without other manifestations. In others the symptoms were more severe, including alternating periods of consciousness and unconsciousness with drowsiness and mental confusion. An intravenous injection of 10 cc. of a 10 per cent solution of calcium chloride brought about improvement in less than twelve hours in the

second patient. Its administration can be regarded as a diagnostic measure, and it seems advisable that calcium chloride be used as soon as any suspicion of carbon tetrachloride poisoning arises.

Medical Journal of Australia, Sydney

1: 911-946 (May 28) 1938

- Diagnosis and Treatment of Diverticulitis of the Colon. B. Smeaton.—p. 911.
Certain Considerations of Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. B. A. Serjeant.—p. 912.
Use of "Metaphen" in Treatment of Pyothorax and Pyopneumothorax. J. B. Ferguson, A. H. Penington and H. Watson.—p. 916.
Perineal Resection in Bladder Neck Obstructions. R. J. Silverton and C. M. Edwards.—p. 918.
Certain Aspects of Ketosis and Acidosis. A. B. Corkill, Jean P. Marks and K. Johnson.—p. 923.
Methods of Induction of Labor. J. S. Green.—p. 927.
Hospital Administration and Organization. J. H. Blackburn.—p. 931.

1: 947-984 (June 4) 1938

- The History of Leprosy. C. G. Lambie.—p. 947.
The Bundle of His. W. Evans.—p. 962.
Dermatitis Etorulosa, with Description of Causative Fungus. H. L. Kesteven.—p. 963.
Infarction and Fibrosis of the Heart Wall. J. B. Cleland.—p. 967.

Tubercle, London

19: 385-432 (June) 1938

- Old Tuberculin and Purified Tuberculin: Standardization: Preparation of Stable Solutions. K. A. Jensen, G. Bindslev, S. Möller, A. Hansen and P. Lind.—p. 385.
Bacillema in Experimental Tuberculosis. A. Beek.—p. 398.
Tuberculosis in British Guiana. E. Cochrane.—p. 403.

Chinese Medical Journal, Peiping

53: 413-512 (May) 1938

- Efficacy of Parenteral Vitamin A Administration in Vitamin A Deficiency: Clinical Study of Nine Cases. F. T. Chu and C. K. Lin.—p. 413.
Dick Reaction and Active Immunization Against Scarlet Fever with Toxoid Among School Children. C. J. Wu and T. C. C. Ma.—p. 427.
*Gunshot Wounds of the Brain. S. T. Kwan and Y. C. Chao.—p. 439.
Total Nitrogen Content of Normal and Pathologic Fasting Gastric Juice. C. F. Wang.—p. 445.
Bacteriologic Study of Cholera-like Vibrio Isolated from Blood of a Patient. K. H. Pang.—p. 450.
Treatment of Gonorrhea with Sulfanilamide. H. E. Shih and J. C. Hsiung.—p. 455.
Schistosomiasis and Danti's Disease: Inquiry into Their Possible Relationship. H. E. Campbell.—p. 459.
Dermoid Cyst of Bladder: Report of Case. W. L. Wallace and M. C. Wong.—p. 467.
Treatment of Neurologic Manifestations of Pernicious Anemia: Report of Case. C. S. Yang and S. L. Chang.—p. 469.
Treatment of Gunshot Wounds Under Wartime Conditions: I. Wounds of Skull and Brain. A. von Miorini.—p. 477.
Operation of the Carrel-Dakin Cell with Alternating Current: Note. Y. M. Hsieh and T. Y. Liu.—p. 489.

Gunshot Wounds of the Brain.—Kwan and Chao present the results of sixty-one cases of gunshot wound of the brain which have been treated in the Peiping Union Medical College Hospital during the last fifteen years. The mortality for the total cases, in each of which the dura had been penetrated, was 52.8 per cent. Of thirty-eight patients admitted in a fully conscious mental state thirteen died, ten of twelve patients admitted in a semiconscious state died and of eleven patients admitted in a totally unconscious condition nine died. About 46 per cent of the patients showed some form of widespread paralysis. In the twenty-six instances in which cultures of the wound were made, streptococci appeared eighteen times, staphylococci eleven times and Bacillus coli three times. Bacteriologic examination of the cerebrospinal fluid is of great importance: Twenty-four patients showed signs of meningeal irritation, in twelve of the latter patients cultures were positive and all of them died. Operative treatment was given to thirty-nine patients and of these sixteen survived, the operative mortality being 58.9 per cent. The procedures carried out varied but included drainage of the wound (including the scalp, skull and the brain), drainage combined with débridement and drainage of the abscess of the brain. From a careful study of the clinical course and operative observations in each fatal case it is found that meningitis was responsible for twelve deaths; gross destruction of cerebral tissue with extensive paralysis of cerebral function was the cause of eleven deaths, bronchopneumonia and streptococcal bacteremia was each responsible for the death of three patients, and one death was attributed to brain abscess, to brain abscess complicated by acute uremia, and to uremia alone.

Archives Méd.-Chir. de l'App. Respiratoire, Paris

12: 345-424 (No. 5) 1938

Anatomy, Radiology and Pleuroscopy of Subpleural Vesicles: Role of Exertion in Their Formation and Rupture. M. R. Castex, E. S. Mazzei and O. A. Vaccarezza.—p. 345.

*Bronchography with Lipiodol in Pulmonary Tuberculosis and in Pulmonary Syphilis. A. Lévi-Valensi, P. Sudaka and R. Négri.—p. 361.

Isolated Fracture of First Rib. M. Mouritch.—p. 385.

Spontaneous Rupture of Aorta in Lungs: Pulmonary Rupture and Consecutive Hemothorax. T. Moisesescu, D. Dimitrescu and V. Paidiu.—p. 388.

Respiratory Role of Scalenus and Intercostal Muscle Studied in Function of Pulmonary Collapseotherapy. H. Joly and P.-A. Vincent.—p. 392.

Bronchography with Iodized Oil.—Lévi-Valensi and his collaborators divide their report on bronchography with iodized oil into three different parts. They describe their experiences with this method (1) in patients with various forms of pulmonary tuberculosis, (2) in a patient with pulmonary syphilis, and (3) in tuberculous patients with old syphilis. After calling attention to the fact that formerly the endotracheal injection of iodized oil in tuberculous patients was rejected by some because of the dangers it involves and because of its negligible diagnostic interest, they cite other investigators who demonstrated the harmlessness of this method and its diagnostic value. Then they report their own experiences with the bronchography by means of iodized oil in twenty patients with different forms of pulmonary tuberculosis. In all the nasal tube was employed. Before reporting the details of these cases they stress the harmlessness of the injection of the iodized oil. Neither in these twenty patients nor in the twenty old syphilitic patients with tuberculosis (discussed in the third part of the report) did the authors observe serious accidents. In twenty-eight of the forty patients no reaction whatever resulted, whereas twelve exhibited an increase in temperature. The second advantageous aspect stressed by the authors is the facility of the injection of the cavities. If the patients are disregarded who either expelled or swallowed a large part of the iodized oil, it can be said that the oil penetrated to the cavities in from 90 to 95 per cent of the cases; that is, if bronchography with iodized oil is correctly carried out, it will practically always reveal an existing pulmonary cavity. As regards the aspects of the bronchi in the first twenty tuberculous patients, the authors say that the endotracheal injection of iodized oil brought into evidence in sixteen (80 per cent) of the patients the existence of more or less pronounced bronchial dilatations. It was observed in 60 per cent of the acute forms, in 75 per cent of the chronic fibrocasseous forms and in 100 per cent of the ulcerofibrous and of the fibrous forms. This demonstrates that bronchial dilatation is extremely frequent in the course of pulmonary tuberculosis. The authors discuss the different forms of bronchial dilatation encountered and suggest that the pathogenesis of these dilatations probably depends on multiple factors. Discussing the value of bronchography with iodized oil in the case of pulmonary syphilis, the authors say that the necropsies corroborated with absolute precision the lesions observed during bronchography. They discovered bronchial dilatation in seventeen of the twenty tuberculous patients with old syphilis.

Journal de Chirurgie, Paris

51: 801-955 (June) 1938

*Aschheim-Zondek Reaction and Hormone Serum Titration of Brindeau-Hinglais in Gynecologic Practice. A. Brindeau, H. Hinglais and M. Hinglais.—p. 801.

Surgery of Rectum by Transsacral Route. F. d'Allaines, P. Jourdan and L. Stéfani.—p. 817.

Incision of Supra-Optic Lamina: Method of Treatment of Internal Hydrocephalus by Drainage of Third Ventricle. P. Wertheimer and L. Mansuy.—p. 838.

Posterior Capsuloplasty of Knee (Posterior Capsular Disinsertion): Indications and Technic. J. Forestier, J.-J. Herbert and P. Aboulker.—p. 849.

Aschheim-Zondek Reaction and Hormone Titration.—Brindeau and the Hinglais say that under ordinary conditions the Aschheim-Zondek test is practically infallible; that is, the reaction is always positive during normal pregnancy in full evolution and is always negative in normal nonpregnant women. In this paper the authors give their attention chiefly to the value of the method in abnormal conditions. After discussing the appear-

ance and disappearance of the positivity of the Aschheim-Zondek reaction and after describing the results obtained with this method in cases such as the death of the ovum, extra-uterine pregnancy, vesicular mole and postmolar malignant chorionepithelioma, they discuss the quantitative method which they developed. They demonstrate that there is a remarkably constant relation between the hormone content of the blood and the vitality of the syncytial elements of the placenta. This relation is so regular that from the practical point of view the gonadotropic hormone content of the blood can be considered as proof of the activity of the placental organ. The authors insist that it is the vitality and not the quantity of the active placental tissue which is important. The quantitative method described, that is, the hormone titration of the serum consists in the determination of the gonadotropic substance in the serum of the patient. The titration is performed on the rabbit and the unit is defined as the quantity of gonadotropic substance which, when injected intravenously, suffices to elicit within forty-eight hours in a rabbit weighing about 2 Kg. at least one hemorrhagic dot in one of the two ovaries. The result is expressed as a rabbit unit per liter of serum; that is, as a number directly proportional to the quantity of the hormone secretion. They say that the secretion of gonadotropic substance during pregnancy as determined in the blood is always abundant. Expressed in rabbit units per liter, the lowest values are between 1,000 and 2,000 and the highest between 20,000 and 25,000. During the first third of the period of pregnancy the values are between 10,000 and 12,000 units; this figure decreases during the last third of pregnancy. The extremes of the aforementioned figures define the limits of placental activity compatible with a normal pregnancy. If less than 2,000 units is present, the existing pregnancy is accompanied by a placental hypo-activity. A spontaneous abortion threatens. If less than 500 units is detected, death of the ovum may be regarded as certain. If more than 25,000 units is present, the pregnancy is accompanied by a placental hyperactivity. In certain toxicoses of pregnancy such as hyperemesis gravidarum, the hormone content of the blood may be between 25,000 and 50,000 units. In pathologic evolution of the ovum, such as vesicular mole, the hormone content may be 60,000 units or more. In order to detect the development of a malignant chorionepithelioma following the expulsion of a vesicular mole, it is necessary to repeat the titration of the hormone content of the blood at definite intervals, after eight, twenty, thirty days and so on. If the hormone content decreases to zero, the woman may be regarded as out of danger, but if the hormone content increases again after having been decreased, malignant degeneration is certain.

Presse Médicale, Paris

46: 913-936 (June 11) 1938

*Treatment of Hypertrophy of Prostate by Total Testicular Extract. E. Cunéo and J. Jomain.—p. 913.

Agranulocytosis and Hemorrhoidal Intercarceration. M. Rachev and M. Petrov.—p. 916.

Hypertrophy of Prostate.—Cunéo and Jomain review the principle underlying the treatment of hypertrophy of the prostate by means of an extract of the male genital gland. They direct attention to the periureteral glands, described by Albarran, which are found on the superior part of the prostatic ureter, between the mucosa of the ureter and the vesical sphincter. The fact that this group of glands is encountered only in subjects of an advanced age suggest that they are the point of departure for the central adenoma of the prostate. Since they are of müllerian origin, that is, of a female nature, hormone changes probably play a part in their hypertrophy and it was decided to try testicular extracts in the treatment of prostatic adenoma. The authors used total testicular extract rather than androsterone, which is isolated from this extract. They utilized a glycerinated testicular extract in ampules of 5 cc., representing 0.6 Gm. of fresh gland. Physiologic titration revealed that each ampule contains 3 physiologic international units and that its effect on the comb of a capon is the same as that of 0.3 mg. of androsterone acetate. When the authors first tried this treatment they employed small doses, giving only

one ampule every second day. Later they gave the dose daily, continuing it for from twelve to twenty days; convinced of the harmlessness of the preparation, they even administered two ampules a day. The authors employed the testicular extract in the treatment of uncomplicated hypertrophy of the prostate, in cases in which the prostatic hypertrophy was complicated by acute complete retention of the urine and in cases in which the hypertrophy was complicated by prostatitis. They say that testicular extract exerts a favorable influence on the functional disorders that accompany the prostatic hypertrophy, particularly the pollakiuria, and they gained the impression that its prolonged application may modify the physical and radiologic signs of the adenoma. If it is begun at the time of the first appearance of prostatism, it may prove of prophylactic value. However, even in cases of confirmed hypertrophy of the prostate, it may produce favorable results. After endoscopic resection, the testicular treatment may be helpful in preventing relapses.

46: 937-952 (June 15) 1938

- *Parasitic Epilepsy. P. Pagniez and A. Plichet.—p. 937.
Role of Sympathetic Nervous System in Physiopathology of Pain. A. Salmon.—p. 939.
Transmission of Nervous Influx in Central Nervous System. D. Nachmansohn.—p. 942.

Parasitic Epilepsy.—Pagniez and Plichet state that in guinea pigs they demonstrated the essential part played by certain cutaneous parasites in the production of epileptic attacks. Further they review reports from the veterinary literature on the parasitic origin of epileptic attacks in animals. Among others they cite a disorder known under the term of contagious epilepsy in hunting dogs, which was found to be caused by oto-acariasis. Following the destruction of the acari by parasiticides the epileptic attacks of the dog disappeared. Oto-acariasis has been reported to elicit epileptic crises also in cats and foxes. In horses epileptic attacks have been known to be produced by the accumulation in the auditory meatus not only of acari but also of *Aspergillus niger*. That parasitic epilepsy is not limited to mammals is proved by the fact that it has been observed in chickens. Moreover, it seems that intestinal parasites are the causal factor of epilepsy in animals even more often than are the cutaneous parasites. Further, the authors give their attention to the part played by parasites in the pathogenesis of human epilepsy. They are skeptical about a causal connection between parasitism and epilepsy in human subjects and point out that the literature on this problem is obscure. Their personal observations corroborated their skepticism. They report the clinical histories of several epileptic patients with parasitic infestation, such as *Taenia*, *Oxyuris*, *Lambli*a, *Amoeba* and *Trichomonas*. The histories indicate that the expulsion of the parasites exerted no influence whatever on the epilepsy. Thus they arrive at an entirely different conclusion than the one that was suggested by the animal experiments and by the observations in veterinary pathology. On the basis of their clinical observations they conclude that if parasitic epilepsy exists at all in human subjects it is a most exceptional occurrence.

Sang, Paris

12: 569-676 (No. 6) 1938

- Transitory Leukocytic Attacks Followed by Lasting Leukocytosis and Myelogenic Leukemia in a Radiologist. G. Mainot, L. Girard and J. Bousser.—p. 569.
Hepatic Opothorapy and Cholesteremia. P. Van De Calseyde.—p. 583.
*Nervous Complications of Acute Leukemia. N. G. Nordenson.—p. 605.
*Clinical Aspects of Atypical Leukemias, Called Leukemoid Conditions. E. A. Kost and V. I. Rachman.—p. 614.

Nervous Complications of Acute Leukemia.—Nordenson describes the clinical history of a man aged 66 who during the weeks preceding hospitalization had been troubled by growing fatigue and dizziness. Four days before he entered the hospital his legs felt weak, and on the following day they became paralyzed. Two days later his arms also became paralyzed. Examination of the buccal and laryngeal cavities disclosed nothing abnormal, with the exception of an alveolar pyorrhea and a slight mucous atrophy. The patellar and tendon reflexes were not elicitable. The spinal puncture revealed normal conditions and the reactions of Wassermann and of Müller were

negative. The examination of blood and urine revealed diabetes. The morphology of the leukocytes was abnormal and their differentiation was difficult at first. There was a predominance of myeloblasts and, as the fatal end approached, nearly all the leukocytes were of the myeloblastic forms. Repeated sternal punctures disclosed that the myeloblasts predominated in the bone marrow as they did in the peripheral blood. During the first few days after hospitalization the paralytic symptoms improved slightly but the general condition remained about the same. The diabetic disorder was regulated by dietetic measures. Otherwise the patient received palliative treatment. He was subjected to a series of roentgen irradiations with small doses. At first the temperature fluctuated between 37 and 38 C. (from 90.6 to 100.4 F.), but finally it reached 40 C. (104 F.). The general condition became constantly more aggravated and necrotic processes appeared in the mouth two days before death. The patient died in a condition resembling septicemia. On the basis of the medulloctytic aspects the disorder was diagnosed as an acute leukemia with paramyeloblasts. Necropsy likewise disclosed an acute myeloid leukemia. Moreover, in the central ganglions and in the anterior horns of the spinal cord numerous small areas of softening were discovered, which explained the paralytic conditions. The pathologic foundation of the softening was probably a hemorrhage.

Archiv für Verdauungs-Krankheiten, Basel

63: 1-112 (May) 1938

- Methods and Errors in Therapy of Ulcer. I. Boas.—p. 3.
Changes on Gastric Contents Following Withdrawal. H. F. O. Haberland.—p. 11.
Method of Determination of Ferments in Duodenal Contents: Nephelometric and Titrimetric Determination of Trypsin. H. Leubner.—p. 14.
*Behavior of Normal Human Stomach Toward Stimulus of Test Breakfast. F. Enriquez de Salamanca.—p. 37.
Melanosis Coli. A. Czaczkes.—p. 95.
Triboulet's Reaction. Jeanette Bondi.—p. 100.

Normal Human Stomach and Test Breakfast.—After calling attention to gaps in the knowledge about the physiology of the stomach, especially its evacuation, its secretory activity and the relations between the secretion and the motility, Enriquez de Salamanca describes his studies on the gastric function of about eighty persons with normal stomachs. The test breakfast used by him consists of 250 cc. of tea and 20 Gm. of bread. To 300 cc. of boiling water he adds 3 Gm. of tea leaves. After steeping, the fluid is filtered off and 2 cc. of a 15 per cent solution of manganese sulfate is added, also 2 cc. of a 1 per cent solution of saccharin. Water is added to make the quantity exactly 300 cc. Of this quantity, 50 cc. is retained for later comparison. The remaining 250 cc. is given to the patient together with 20 Gm. of bread. The essential and original aspects of the author's test are as follows: 1. The quantity of tea that is still present in the stomach at the time of the withdrawal (sixty minutes after ingestion) is determined. This is made possible by the addition of the manganese sulfate. 2. The quantity of bread that has not been evacuated as yet is determined. 3. The entire gastric contents are determined. Summarizing his observations, the author concludes that it is not the secretory action which dominates the physiologic processes in the stomach but rather the evacuation, particularly the evacuation of the solid constituents of the test breakfast. The solid substances stimulate the secretion. The slower the evacuation of the solid constituents, the greater is the stimulation of the secretion and, depending on the condition of the gastric mucosa, the reaction will be greater or less or more or less normal; there may be a normal hyperacidity or a hyperacidity with dyskinesia; that is, with subsequent rapid evacuation of the fluid part or a relative or absolute hypo-acidity, which usually goes hand in hand with a hypersecretion. Thus hypersecretion is observed not in persons with hyperchlorhydria but rather in those with hypochlorhydria. The normal condition of the stomach is not characterized by a definite total acidity content of the gastric mixture, as there are many types of gastric normality. The normal condition consists in the harmony of all gastric functions. With the aid of the author's test and his graphic plottings, it can be determined in every individual whether the gastric function is normal or abnormal and what are the type and cause of the abnormality.

Gazzetta degli Ospedali e delle Cliniche, Milan

59: 473-500 (May 8) 1938

Appendicitis and Urticaria. M. Ravetta.—p. 475.

*Morphologic Electrocardiographic Researches on Localization of Myocardial Lesions in Either Right or Left Ventricle. F. Kienle.—p. 481.

Electrocardiography in Localization of Myocardial Lesions.—Kienle discusses the possibility of applying the thoracic unipolar derivation in taking electrocardiograms for studying the morphology and localization of myocardial lesions in either the right or left ventricles. He uses an "indifferent" electrode, which is applied to the back of the patient, and applies a "different" electrode to different points at the anterior thoracic wall. With certain points of derivation, especially on the right or left ventricles, in or near the anterior axillary line and left parasternal line and on the apex, the electrocardiogram shows early predominant lesions in either the right or left ventricle. The author gives the following example: The electrocardiograms of the extremities were normal in a case of insufficiency of the heart and in two cases of infarct of the anterior wall of the left ventricle and of the posterior wall of the thorax, respectively. The electrocardiograms derived from the ventricles in case of insufficiency showed negative T deflections, which became normal first in the left ventricle and then in the right, with complete compensation. Those taken over the points of the infarcts showed complete S-T deflections, which became positive as the clinical symptoms regressed. The ordinary electrocardiograms in all cases showed abnormalities later than those taken by the author's technic. The diagnosis of infarct of the posterior wall of the thorax was verified at necropsy. The author emphasizes the importance of the technic for the topographic diagnosis of infarct.

Rassegna di Fisiopatologia, Pisa

10: 129-192 (March) 1938. Partial Index

*Modification of Equilibrium of Blood Proteins After Paracentesis in Liver Cirrhosis. G. Benedetti.—p. 159.

Acid-Base Equilibrium in Arterial Hypertension. M. Pellegrini.—p. 185.

Blood Proteins in Cirrhosis of Liver.—Benedetti determined the amount of total and fractional protein in the blood before and after paracentesis in seven patients suffering from ascites in cirrhosis of the liver of Morgagni-Laënnec type and in two patients with noncirrhotic ascites. The quantitative determinations of the proteins were made by Howe's method. The osmotic pressure of the proteins was determined by Govaert's constants. The author found that the equilibrium of the blood proteins is disturbed in cirrhotic ascites and that the disequilibrium becomes more grave after paracentesis, whereas in patients with noncirrhotic ascites it is normal and unaltered by paracentesis. In cirrhotic ascites the amount of total proteins is normal or slightly increased, albumins are diminished, globulins are increased, the protein quotient is diminished and inverted and the osmotic pressure of the proteins is diminished. Following are the averages in milligrams for each hundred cubic centimeters of blood: total proteins 8.76 mg., albumins 2.83 mg. and globulins 6.38 mg. The protein quotient averages 0.47 and the osmotic pressure 31.8. After paracentesis there is total and fractional hypoproteinemia. The protein quotient does not change. The osmotic pressure of the proteins is greatly diminished. The fractional hypoproteinemia is in proportion to the quantity of either albumins or globulins which were eliminated by paracentesis. When hypoproteinemia after paracentesis depends on normalization of a preexisting condition of hyperglobulinemia, the osmotic pressure of the blood serum slowly increases as the protein quotient increases. The same is true after tapping of small amounts of ascitic fluid which do not induce hypoproteinemia. Tapping of small amounts of ascitic fluid induces a moderate elimination of albumins with consequent improvement of the equilibrium of blood proteins and increase of blood albumins and of the osmotic pressure. The author concludes that paracentesis induces mobilization of the fluids from the peripheral tissues to the abdomen. The ascitic fluid, in passing through the blood, takes away the proteins. It is advisable to administer mercurial diuretics to the patients. When paracentesis is indicated, as in an emergency operation, it is advisable to make frequent small tappings rather than paracentesis at long intervals.

Semana Médica, Buenos Aires

45: 1333-1400 (June 16) 1938. Partial Index

*Treatment of Intussusception by Barium Enema Under Roentgen Control. J. A. Orfila, J. Barbuzza and H. J. Notti.—p. 1333.

Cholesterol Pleurisy. O. Aguilar, M. Schneider and I. Del Villar.—p. 1349.

Basal Metabolism in Pregnancy. A. S. Coatz.—p. 1355.

Rectal Prolapse. A. Alperovich.—p. 1365.

Intussusception in Nursling.—Orfila and his collaborators discuss the value of the barium sulfate enema administered under roentgen control in intussusception in infants and children. The enema is given without anesthesia and the pressure by which it enters between the two cylinders of intussusception separates them and pushes the filled intestinal loop to the cecum. Disinvagination generally takes place when intussusception reaches the cecum. The proof is given by the massive passage of barium to the ileum coincidentally with the disappearance of the swelling. Partial filling of the cecum indicates persistence of intussusception, and in order to reduce it it is advisable to make the pressure of the enema intermittent. If this fails, an immediate operation is indicated. In some cases the cecum is filled with barium but the latter does not enter the ileum. Generally in such cases disinvagination took place also when the cecum filled with barium. The diagnosis is made by the roentgen aspect of the filling, the disappearance of the swelling and the general reaction of the patient. All types of intussusception but the ileac may be reduced by barium enema under roentgen control. The only contraindication is given by a late diagnosis. Prolapsed intussusception from the anus is an indication. The authors reported ten cases in infants and children ranging in age from 3 months to 4 years. In all cases the treatment was successful. The authors point out the advisability of early treatment.

Archiv für Gynäkologie, Berlin

166: 1-548 (May 28) 1938. Partial Index

Heart Diseases and Gestation. Von Jaschke.—p. 24.

Prognosis and Therapy of Circulatory Disorders During Pregnancy. W. Schultz.—p. 62.

Chemico-pharmacologic Aspects of Ergot. E. Rothlin.—p. 88.

Hormone Therapy of Ovarian Insufficiency. C. Kaufmann.—p. 113.

Carbohydrate Metabolism and Hormones During Pregnancy. Albers.—p. 238.

Surgical Treatment of Prolapse of Female Genitalia. W. Weibel.—p. 262.

*Role of Appendicitis in Pathogenesis of Female Sterility. Von Mikulicz-Radecki.—p. 327.

Appendicitis and Female Sterility.—Von Mikulicz-Radecki investigated (1) in what percentage of sterile patients appendicitis was the only factor that impaired the tubes and (2) the frequency of sterility in women who had undergone appendectomy. He found that in 14 per cent of sterile women, that is, in every seventh case, appendicitis is the cause of sterility, of course, by way of the tube or by way of the ovaries. As regards frequency, appendicitis takes the third place among the causes of sterility; it is surpassed by inflammations of the genitalia and by hormone disturbances. Investigating the frequency of sterility in women who underwent appendectomy, studies were made on women between the ages of 22 and 42 who had undergone appendectomy in the years between 1920 and 1925, that is, when their ages were between 10 and 25 years. In a material of 119 women who had been married for at least three years and in whom genital inflammations, venereal disease and hormone disturbances could be excluded, sterility was discovered in 14 per cent. Further analysis of the material disclosed that after uncomplicated appendectomies the incidence of sterility is 12.7 per cent, after complicated appendicitis it is 20 per cent and after drainage of Douglas's pouch it is 27.3 per cent. Discussing the practical significance of his observations, the author says that in sterile women in whom tubal or ovarian changes exist the gynecologist should inquire not only whether the woman has undergone an appendectomy but also whether she has had attacks of appendicitis. If an operation is performed to counteract the sterility, the appendix should be inspected and if it is suspected of being the source of an infection, it should be removed. Moreover, in every case of appendicitis, surgical treatment should be resorted to. This is advisable not only because of the appendix itself but also in the interest of the genital organs and fertility. In view of the possible damage

to the genitalia, the author is an opponent of the nonoperative treatment of appendicitis. However, he warns the surgeon against a drainage of Douglas's pouch and also against interventions on the uterine adnexa in the course of appendectomies. He also points out that the hyperemia or reactive inflammation of the right uterine tube usually heals spontaneously.

Klinische Wochenschrift, Berlin

17: 865-904 (June 18) 1938. Partial Index

- Cocaine and Blood Sugar. H.-A. Oelkers and G. Schütze.—p. 871.
 *Treatment of Hyperthyroidism with Vitamin A and Vitamin B₁. J. Jacobi and H. Pomp.—p. 873.
 Infection of Central Nervous System in Venereal Lymphogranuloma. B. Koschucharoff.—p. 876.
 Remarks About Indications for Treatment with Vitamin C. G. Gaehgens.—p. 878.
 Sugar Content of Cerebrospinal Fluid in Course of Insulin Coma in Schizophrenic Patients. M. Fischer.—p. 886.
 *Hepatic Impairment Following Administration of Cinchophen Preparations. G. Köhne.—p. 887.

Vitamin A and Vitamin B₁ in Hyperthyroidism.—Jacobi and Pomp point out that the treatment of hyperthyroidism with vitamin A was based on animal experiments in which an antagonism between vitamin A and the thyroid hormone was discovered. However, the animal experiments were partly contradictory. Before describing their own experiences with this form of treatment, the authors emphasize that in estimating the course of a hyperthyroidism the severity of the metabolic disturbance should be determined in exact figures by measuring the basal metabolic rate, the weight and the pulse frequency. In addition to this, the subjective behavior should be studied. As is well known, the aforementioned criteria can be influenced to a certain extent by rest and by a diet with a reduced protein content. Consequently, if an antithyroid remedy is to be tried, the patient should be subjected to a preliminary observation until the metabolic rate, weight and pulse rate have reached a constant value, or, if this is not possible, until they have reached a certain direction; that is, until a decrease or increase is noticeable. To begin with, the application of an antithyroid remedy after a single examination of the basal metabolism, weight and pulse rate must result in erroneous conclusions. Moreover, it is important to make a comparison with the behavior of these factors in patients who did not receive the medicament to be tested and who were merely subjected to rest and a dietetic treatment. In the course of the last two years the authors treated fourteen patients who had similar forms of hyperthyroidism, either only with a rest cure and dietetic measures or, in addition to this, with a vitamin A preparation. The efficacy was evaluated on the basis of the behavior of the basal metabolism, the weight, the pulse frequency and the subjective condition. The preliminary period of observation, during which spontaneous improvement was often observed, was always carefully adhered to. Contrary to the reports of several other investigators, the authors were unable to detect a favorable effect of the vitamin A preparation on the hyperthyroidism. The combined administration of preparations of vitamins A and B₁ likewise failed to produce a therapeutic effect.

Hepatic Impairment by Cinchophen.—Köhne gives a brief review of the literature on hepatic lesions resulting from medication with cinchophen and cites some of the factors that seem to produce a predisposition to this type of lesion. It appears that glycogen deficiency of the liver, chronic inflammations of the bile passages and nephritic processes may be predisposing factors. Moreover, the virus of rheumatism seems to be an important factor in the production of a hepatic impairment by cinchophen. The author thinks that, generally speaking, cinchophen and other preparations of the quinoline ring are especially likely to produce a toxic effect, if those organs are impaired which play an important part in the metabolic functions (liver and kidneys). He gives a detailed report of a case of subchronic yellow atrophy of the liver in which chronic abuse of cinchophen was the eliciting factor. On the basis of this case history the author directs attention to two important factors: (1) that in the presence of a circulatory disturbance with the resulting metabolic disorder and in connection with a rheumatic infection the danger of a cinchophen intoxication is especially great and (2) that the hepatic impairment elicited by cinchophen does not necessarily produce at once manifest signs in the form of an icterus.

Wiener klinische Wochenschrift, Vienna

51: 625-648 (June 10) 1938. Partial Index

- Albuminuria During Childhood. K. Dietl.—p. 628.
 Hematologic Diagnosis of Multiple Myeloma. I. Zadek.—p. 632.
 Hypertrichosis Universalis in Course of Surgical Disturbances. W. Heller.—p. 633.
 *Adrenals and Angina Pectoris (Pathogenesis and Roentgen Therapy). W. Raab.—p. 635.
 Axillary Lymph Nodes. A. V. von Frisch.—p. 639.

Adrenals and Angina Pectoris.—Raab cites several observations which indicate that rapid excretion of epinephrine may have an essential part in the pathogenesis of attacks of angina pectoris. On the assumption that the attack of angina pectoris is essentially a result of the action of spontaneously excreted epinephrine on the cardiac muscle that is impaired by coronary sclerosis, the author bases the suggestion that an inhibition of the secretion of epinephrine, particularly of the suddenly exacerbated secretion, would be of therapeutic value. He thinks that the action of total thyroidectomy in angina pectoris is due largely to the inhibiting effect on the production of epinephrine. However, he reasons that a more simple and less dangerous means of inhibiting the secretion of epinephrine would be the roentgen irradiation of the adrenals. To each of the two paravertebral adrenal fields the roentgen irradiations are applied in doses of 3 times 200 roentgens; that is, each adrenal receives 600 roentgens. The rays are applied with 180 kilovolts and 4 milliamperes through a filter consisting of 0.5 mm. of copper and 1 mm. of aluminum. A tabular report lists seventeen cases of angina pectoris in which the roentgen therapy was employed, but, in all, ninety-six cases have been treated by the author with this method, fifty-eight of which have been under observation for more than six months. Forty of the latter fifty-eight patients are either considerably improved or entirely free from complaints. In seventeen of these cases a single series of irradiations was sufficient; fourteen required two series and nine required three series. In five cases temporary relapses occurred. Only four of the ninety-six patients treated with this method during the last eighteen months died. On the basis of his own experiences and of the results obtained by Hadorn in Berne, the author concludes that roentgen irradiations of the adrenals is the method of choice in suitable cases of angina pectoris.

Zeitschrift für Tuberkulose, Leipzig

80: 145-216 (June) 1938

- Fate of Patients Who Have Been Treated with Phrenic Exeresis. L. Graff.—p. 145.
 Tuberculosis Among University Students. N. B. Oekonomopoulos.—p. 148.
 *Roentgen Tomography of Lung: Critical Evaluation on Basis of Case That Came Up for Necropsy. H. Böttner.—p. 156.
 Comparative Studies on Two Diagnostic Tuberculin Ointments. A. Rehling.—p. 159.

Critical Evaluation of Tomography.—Böttner says that, generally speaking, the introduction of tomography into the pulmonary diagnosis makes possible the demonstration of cavities behind thick media and is of great importance in deciding a surgical collapse therapy, because it not only demonstrates the presence of a pulmonary cavity but also aids in its localization. After mentioning conditions in which tomography is especially helpful, such as in the differentiation between intrapulmonary and pleural processes, in the diagnosis of tuberculosis of the hilus glands, in the diagnosis of pulmonary tumors and abscesses, of intrapulmonary foreign bodies and so on, the author directs attention to the possible errors in this method. He asserts and illustrates on the basis of a case report that occasionally the tomographic exposures disclose more than is actually present. The tomographic exposures made on this patient indicated that a system of cavities filled the right upper lobe. The patient died following a plastic operation and the necropsy disclosed only one small cavity in the right lobe; sections at many levels disclosed no other cavity, much less an entire system of cavities as had been indicated by the tomography. In this connection the author cites Teschendorf, who pointed out that tomography may be misleading in the diagnosis of cavities between pleural indurations, in that normal pulmonary tissue which lies between denser areas may be regarded erroneously as a cavity. This seems to have been the fact in the described case, in that, behind irregular indurations, transparent pulmonary tissue appeared as a series of cavities.

Acta Psychiatrica et Neurologica, Copenhagen

13: 1-122 (No. 1) 1938

- Neurocomplications in Epidemic Parotitis: Latent Parotitic Meningitis. K. H. Fuhrmann.—p. 1.
 Practical Application of Electromyography in Diagnosis of Tremor. B. Ingebrigtsen.—p. 11.
 Prophylaxis of Crime. O. Kinberg.—p. 21.
 Neurologic Symptoms in Schanmann's Benign Lymphogranulomatosis. B. Roos.—p. 41.
 *Peripheral Nerve Lesions in Cases of Pernicious Anemia. W. M. Van der Scheer and H. C. Koek.—p. 61.
 Ophthalmoneuromyelitis, Multiple and Diffuse Sclerosis in East Asiatics in the Dutch and East Indies. W. J. C. Verhaart.—p. 93.

Peripheral Nerve Lesions in Pernicious Anemia.—Van der Scheer and Koek point out that, as regards the nerve lesions of pernicious anemia, attention has been given chiefly to the changes in the spinal cord and particularly to those of the long ascending and descending tracts in the posterior and lateral columns. Spastic ataxia with impairment of the deep sensibility is present in a great number of cases. This syndrome and the fact that corresponding microscopic lesions are demonstrable in the lateral and posterior columns are responsible for the fact that such great significance has been ascribed to this syndrome and that little attention has been paid to changes in the peripheral nervous system. The majority of the investigators who have studied pernicious anemia regard the involvement of the peripheral nerves as an exception. There are, however, some investigators who have described cases in which polyneuritis is found alone or together with medullary changes, and a few investigators accept the view that it is the rule that polyneuritic symptoms are part of the clinical picture of pernicious anemia. The observations which the authors made in thirty-eight cases of pernicious anemia convinced them of the correctness of the view of the latter investigators. They point out that there has always been a great reluctance to abandon the theory of an involvement of the tracts in the columns of the spinal cord. This is the more surprising since it has long been considered as indisputable that the smooth tongue, with tenderness at the tip and oversensitiveness to heat and acidity, which is one of the most important symptoms of pernicious anemia, is the result of degenerative changes in the nerves innervating the tongue. In view of this fact it seems remarkable that practically identical symptoms in the tips of the fingers and toes, the paresthesias, the severe pains and the supersensitiveness to cold and heat are ascribed not to a neuritis but to a central medullary process. Moreover, it seems surprising that it is never considered strange that in a disease implicating the entire organism the nerves of the tongue should be the only part of the peripheral nervous system to be regularly attacked. In the thirty-eight cases of pernicious anemia described by the authors, the patients without exception complained of numbness and tingling in the distal ends of the extremities. These symptoms gradually increased in intensity, spread toward the knees and elbows and occasionally passed toward the trunk. The authors do not agree with the statement of many authors that impairment of the cutaneous sensitivity occurs only in advanced cases. They give detailed clinical histories of some of the cases observed by them. However, they do not regard it as sufficient to offer clinical evidence, and so they also furnish histologic evidence. Although the number of cases in which anatomicopathologic proof of impairment of the peripheral nerves was obtained is limited, they lend strong support to the view that, in addition to the medullary lesion in the cord, the system of the peripheral nerves is also seriously involved in pernicious anemia.

Hospitalstidende, Copenhagen

S1: 505-548 (May 31) 1938

- *Encephalomalacia and Cerebral Hemorrhage: Review and Preliminary Report. C. J. Munch-Petersen.—p. 505.
 Electrocardiographic Examination During and After Anesthesia. J. Foged and T. Geill.—p. 535.
 Contribution to Technique of Clinical Measurement of Hydrogen Ion Concentration. E. Jarlov and J. Wendelboe-Jørgensen.—p. 542.

Encephalomalacia and Cerebral Hemorrhage.—Munch-Petersen made microscopic examinations in fifteen cases of cerebral hemorrhage and also examined eight cases of cerebral encephalomalacia. The hemorrhage, he concludes, is practically

never due to rupture of blood vessels, and in the preponderating number of cases a diapedesis hemorrhage is almost certainly the most frequent if not the only cause of cerebral hemorrhage. Observations seem to support the conception of parenchymatous origin of the diapedesis. He says that in diapedesis hemorrhage the different reactions of the tissue to the hemorrhage are characteristic. In some places the blood is soaked up as by blotting paper, in other places it is defined in larger or smaller compact masses. A difference in the colloid-chemical relations of the tissue and so a particular preformation of the parenchyma are thus indicated. Now and then in an affected region there are large parts outside the hemorrhage where the blood vessels are dilated, the tissue strongly edematous and filled with clasmotodendrites; the circulation itself is not noticeably affected, at least to a degree corresponding to the parenchymatous changes, which suggests primary changes in the fluid apportionment. The parenchymatous changes are assumed to form the basis for malacias and hemorrhages and are believed to be strongly influenced by the blood pressure and the condition of the walls of the blood vessels.

Norsk Magasin for Lægevidenskapen, Oslo

99: 561-656 (June) 1938

- *Intensification of Serologic Diagnosis of Syphilis by Meinicke Clarification Reaction II. H. Sæthre and A. Bretteville-Jensen.—p. 561.
 Acrodynia (Selter-Swift-Feers Syndrome). A. Sundal.—p. 585.
 Investigations on Prognosis of Schizophrenia and Considerations on Diagnosis of Schizophrenia. G. Langfeldt.—p. 589.
 *Family with Multiple Neurofibromatosis (von Recklinghausen's Disease) F. Harbitz.—p. 609.
 Grave Gas Gangrene with Recovery: Case. H. F. Harbitz and H. Natvig.—p. 616.
 Experimental Investigations on Effect of Protosil on Gas Gangrene. H. Natvig.—p. 631.

Serologic Diagnosis of Syphilis.—Sæthre and Bretteville-Jensen made parallel tests of the Wassermann reaction and the Meinicke clarification reaction in the serum from 1,535 psychiatric patients and in the spinal fluid from 351 of these. They state that the Meinicke clarification test surpassed the Wassermann test in sensitivity and gave practically no unspecific reactions in the spinal fluid. Where parallel performance of a number of seroreactions is impossible they recommend the Meinicke test as a practical first reaction in routine examination of all patients. The serums of all cases of suspected syphilis and all positive Meinicke clarification serums should be sent to a central laboratory for the Wassermann test. The isolated positive Meinicke clarification reaction alone does not allow certain conclusions as to syphilis.

Multiple Neurofibromatosis.—Since 1908 Harbitz has collected data concerning a family in which multiple neurofibromatosis (von Recklinghausen's disease) or extensive pigmentation has appeared in three generations. All nine children of the third generation have multiple neurofibromatosis and pigmentation or, in the three youngest children, aged respectively 14, 12 and 10, multiple pigmented spots. The mother of these children has multiple neurofibromatosis on numerous nerves, pigmentation of the skin and possibly a tumor of the acusticus; a plexiform fibroma was removed from the eyelid and temple when she was 20, and recurrent plexiform neuromas were excised from the upper and lower eyelids in 1934. In 1931 a gastric tumor with the microscopic structure of an adenocarcinoma was removed. In one case there was diffuse gliomatosis in the meninges and spinal cord. Multiple neurofibromatosis, the author states, is apparently a hereditary disorder with dominant transmission and occurs equally often in the sexes. He calls attention to two other hereditary diseases of the central nervous system which seem to be closely related to multiple neurofibromatosis, namely tuberous sclerosis, with its complex of tumors occurring simultaneously in the internal organs and skin, and hemangiomatosis, with frequent multiple appearance in the retina and central nervous system simultaneously with other tumors, especially in the pancreas, kidneys and spleen. He advises the collection of cases of these disorders with combination of different tumors which appear as hereditary diseases, as the material is at present too scanty to allow detailed study of the manner of inheritance.

